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A BRIEF OF ENDOCRINE SYMPTOMATOLOGY

H. M. C. GROW, M. D.
Yuma, Arizona

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The average practitioner looks upon endocrinology with some consternation. The reasons are many. Claims and counterclaims have been made about each of the glands. There has been a uniglandular school of thought versus a pluriglandular school. Many of the medical schools have sadly neglected organotherapy in their courses of study. Excepting on the thyroid most doctors out of medical school a few years had little training during their university career in this field of medicine. In spite of evidence to support one theory or another, endocrinology is gradually drawing its lines tighter and truths are becoming definitely established. A more clear-cut point of view is being presented on certain of the hormones together with clinical results to substantiate animal experimentation. We should realize that here is a powerful weapon that is being developed stage by stage and presented to us as we travel along in our practice; we should absorb the truths. To quote from a recent quarterly, "It all boils down to this: The whole fabric of human physiology, and even anatomy, rests upon the morphologic structure and functional balance of the glands of internal secretion, and there is scarcely a disease to which human flesh is heir—perhaps there are none at all—which does not affect or is affected by the endocrines. It may be a bit premature, at the present moment, to declare, 'Know endocrinology and you know medicine,' but it is perfectly safe to say that, the man who does not know endocrinology does not know medicine, in the modern sense."

The literature in the field of organotherapy is rapidly becoming so extensive that the practitioner unless he has the fundamentals of the interrelations of the various glands cannot possibly keep up with it.

I purpose to give a brief outline of the relationship of the endocrines to bodily and mental changes that the busy physician may have an outline to follow in his detail study of the glands. Most endocrinoses have certain physical characteristics that announce themselves, and it is the recognition of these salient symptoms and their treatment by the average practitioner that is going to advance endocrinology in the field of therapy.

The various extracts and their different forms of standardization are open to pro and con discussion, but the more common symptoms that go with the dysfunction of each respective gland are clearly established and accepted.

A great part of the outline used under each of the specific glands for this paper has been taken from, "Endocrinology Diagnosis and Treatment"[1]. Credit must also be given to other excellent literature furnished by several commercial houses. It is through this literature and only through it that the practicing doctor is able to keep up with the rapid progress in this field.

The full-fledged members of the endocrine chain are the thyroid, parathyroid, testes, pituitary, ovaries, and the adrenals. The quasi-endocrines are the pancreas, liver, duodenum, spleen, placenta, mammary gland, prostate, and the stomach. Each of these glands has specific duties to perform and secrete their respective hormones, and several store and create more than one hormone.

When we realize that these small but powerful organs can determine the form of our body

1. Endocrinology Diagnosis and Treatment, published by the Cole Chemical Co., Inc.

and the functioning of our mind, it is almost impossible to conceive their full potency. In fact, one could almost say, every run-down patient is an endocrine case.

In this paper I treat only with the full-fledged members of the endocrine chain as the quasi-endocrines would require a concomitant treatment of fields other than organotherapy.

The thyroid gland has been the keystone of endocrinology. It has a larger history and a better established field of therapy surrounding it than have the other glands. Because of this fact I devote less space to the thyroid than to the other glands.

The thyroid stimulates and regulates metabolism, mental function, development of bone centers, and the ossification of the epiphyseal junctions.

We may have hyper-thyroidism (thyro-toxicosis) or hypo-thyroidism. In borderline cases of hypo-thyroidism, it is necessary to eliminate pituitary, gonadal, or adrenal failure before placing the trouble entirely on the thyroid. In any endocrine dysfunction more than one gland may be involved and usually is. Hyper-thyroidism may be caused by an upset in the delicate inter-relations between the various glands, as in the menapause, or it may be caused by an overdose of the thyroid hormone.

Hypo-thyroid conditions comprise adult myxedema, childhood myxedema and endemic cretinism.

The most important and possibly only function of the **parathyroids** is the maintenance of normal calcium level in the blood.

With hyper-parathyroidism tumor is always present, but usually of only 1 of the 4 parathyroid; tumor cannot be palpated and the signs and symptoms are: (1) bone decalcification; (2) polyuria, and heavy urinary precipitates and stone or cystitis and renal insufficiency in a few cases; (3) anorexia, nausea, vomiting, followed by dulling of the mentality verging on coma. The circulatory system fails and a hyper-calcemia exists. The hormone and calcium must be stopped and magnesium and physiclogical saline administered.

A hypo-parathyroidism means tetany; however, this condition is only one of the causes of tetany and this syndrome is well known to medicine. "Tetania parathyreopriva" is the form of tetany caused by a removal of 2 or more of the parathyroids or a congenital absence of 2 or more of these small glands.

The testes of the male like the ovaries of the female have 2 secretory roles. An analogy can be drawn between the spermatozoa and the ova, because both external secretions are concerned with procreation and are termed germinative elements. The internal secretion of the testes is produced by the interstitial cells of Leydig and unlike the germ cells are unaffected by x-ray. However, both x-ray and vasectomy cause atrophy of the germinative cells while leaving the intersitial cells of Leydig intact.

The endocrinologist is primarily interested in the secretion from the interstitial cells of Leydig. It is these cells that cause the secondary sex-characteristics, and development, maintenance, and function of the accessory sex-organs. The testes is not a self contained gland as to function as it depends on the pituitary. The prolan A (gonadotropic) stimulates the germinative cells, and the prolan B (gonadotropic) the interstitial cells.

A fraction in the testis controls skeletal growth through regulating fusion of the epiphyses. The mind and psyche are also stimulated by the testes.

In pre-adolescent hyper-gonadism in the mail sexual precocity and excessive body development occur without concomitant mental development. This rapid growth maintains to a point and then ceases because of epiphyseal unions.

Adult-male hyper-gonadism causes increased libido, exceptional strength and virility, frequent erections and emissions, . pronounced growth of hair, strong voice, and no fat on the bony eminences.

Hypo-gonadism in the male may be caused by castration, x-ray or radium, venereal disease, mumps, tuberculosis, alcoholism, trauma and senility.

The pre-adolescent eunuch is tall, with lack of genital development and libido, flabbiness of muscle, a marked docility and an apathetic look.

The early adult eunuch has obesity with feminine distribution, retrogression in the penis and prostate, thin falling hair, decreased libido, and precocious senility. No skeletal changes take place after twenty-five.

Early eunuchoidism such as caused by mumps results in tall and disproportionate stature with a feminine distribution of fat. The genitals are underveloped and hypotrichosis exists. A high pitched voice may be present and x-ray examination shows the bones to be younger than normal for the age of the patient.

Late eunuchoidism results in atrophy of the genital apparatus with retrogression of the secondary sex-characteristics, obesity of the pituitary type and premature senility. No bone changes take place.

Abdominal cryptorchidism causes obesity, hypo-trichosis, broadening of the pelvis toward the feminine pattern, impotence and sterility. Should the arrest of the testes be in the inguinal canal the only symptom as a rule is sterility.

The **pituitary** can be truthfully called the throttle of the endocrine motor. It appears as a central power house for the clearing of hormonic impulses to the other important members of the endocrine chain. It is through stimulation and inhibition of other glands through pituitary extracts that a great field of therapy has been evolved. The hormones of the pituitary and of the glands regulated by it have not been chemically unravelled as yet, but their existence is known to medical science.

The pituitary has 2 lobes, the anterior or glandular factor, and the posterior or nervous factor. Evidence supports a separate functon by the pars intermedia, but I descuss it no further.

The anterior lobe develops a growth, gonadotropc, thyrotropic, adrenotropic, lactogenic, pancreaotropic, ketogenic, and parathyrotropic hormones. The posterior lobe generates pitocin, the oxytoxic principle, and pitressin which raises blood pressure, increases urinary output, and acts on the intestinal musculature.

There are 3 types of cells in the **anterior lobe of the pituitary:**

(1) Eosinophilic or acidophilic, said to produce the growth hormone; over-development of them leads to gigantism or acromegaly (pituitary acidophilism).

(2) Basophilic cells which when overactive, as in pituitary adenomas, result in an imbalance in the symptoms pertaining to sex. These cells control the gonadotropic or master sex-hormone.

(3) Chromophobe cells are the opposite of acidophilic, and the result of hypo-action of them is opposite to acromegaly.

Hyper-pituitarism of the anterior lobe in a pre-adolescent individual is termed gigantism. The symptoms are pluriglandular because of overaction of the pituitary, and underaction of the gonads. Underaction of the gonads results in failure of the epiphyseal fusion of the long bones. Gigantism in the active stage results in development of the extremities far out of proportion to the trunk such as: long arms, hands, fingers and long legs, feet and toes. Precocious sexual vigor along with excellent physical vigor, hypertrichosis and glycosuria may be present. Gigantism in the quiescent stage results in physical weakness, premature impotency, sterility, obesity in some cases, hypotrichosis, and an increased tolerance for carbohydrates.

Hyper-pituitarism in post-adolescence is termed acromegaly. The symptoms are acral deformities such as projection of the lower jaw, "spade like" hands and large feet which progressively increase in size. The face is usually oval or hexagonal with thick and heavy tongue and lips below a large, flat nose. There is a tendency to hunch back; bone and joint pains exist. Hypertrichosis develops with heterosexual distribution in women. An adrenal implication may be suggested by asthenia, hypotension, cardiovascular asthenia, and by pigmentation changes and spots. In the stage of exhaustion hypofunction comes into prominence and the carbohydrate tolerance is replaced. Premature impotence replaces sexual vigor. Hypotrichosis replaces hypertrichosis. Physical weakness is intensified. Obesity exists and the acral and skeletal deformaties remain as evidence of hyper-pituitary action.

Cushing's syndrome caused by hyperactivity of the basophilic cells has been cataloged as having the following symptoms: rapidly acquired painful adiposity, confined to face, neck and trunk; a tendency to round shoulders with lumbo-spinal pain; sexual dystrophy—in the female. early amenorrhea; in the male, functional impotence, atrophy of the testes and less libido; a hypertrichosis of the face and trunk in females and in pre-adolescent males; hypertension with tendency to erythremia, and acrocyanosis, which results in a dusky appearance of the skin; osteoporosis; somnolence; cutis marmorata; and hyperglycemia.

A hypo-secretion of the anterior pituitary is known as hypophyseal infantilism or dwarfism and in pre-adolescence it portrays the Larian-Levi type. This type embodies small head and hands, receding chin, broad feminine type pelvis and genital aplasia in which both male and female are sterile with lack of secondary sex characteristics. There is premature aging, and absence of psychic and mental symptoms.

Post-adolescent hypophyseal infantilism results in undergrowth of the flat and short bones with the long bones being normal. The sex organs are normal but impotency and sterility exist. In the female, amenorrhea, metrorrhagia, and dysmenorrhea are common. The pulse, blood pressure, and temperature are all apt to be subnormal. The mind is normal.

Frohlich's syndrome or dystrophic genitals occurs in certain diseases of the anterior lobe, or certain lesions of the adjoining hypothalmus, and can occur at any age; but most cases closely follow puberty. Diagnostic data vary with the age. The diagnostic triad comprises pituitary and sex characteristics, and skeletal retardation. Pituitary adiposity in the male has a tendency towards feminine distribution, the mammae, mons veneris, and the thighs usually being affected. In childhood this syndrome is indicated by the tapering fingers and small hands, together with the progressive and rapid putting on of weight. In girls mounds of fat appear on the hips, buttocks, and shoulders, with an abdominal apron of fat. The arms and legs remain neat and trim. Laziness, timidity, and shyness are common. The sex changes and characteristics of Frohlich's syndrome if before puberty result in a failure of the primary sex characters to develop and a genital hypoplasia. At puberty, or shortly thereafter, the symptoms of this syndrome are partial development of the secondary sex characters with a lack of libido. The genitals may or may not be fully developed and may or may not atrophy. In women amenorrhea is common. Should this syndrome appear at a later stage in life, and after normal development, mild retrogression of secondary sex characteristics occurs, with a tendency to hypertrichosis and adiposity. There is also a mild degree of atrophy of the genitals and a progressive decrease in libido and potencia.

Dercums disease (adiposis dolorosa) is a syndrome of painful pituitary adiposity comprised of lumpy nodular masses existent on the under surface of the arm, and on the abdomen. The pain is either spontaneous or on touching. There is a marked asthenia and phychosis, and, in women, the usual sufferers from this disease, it begins at menopause.

Simmond's syndrome is a complete atrophy of the pituitary body with the patient aging prematurely followed by cachexia and death. The syndrome of diabetes insipidus is absent.

The Laurence-Biedl syndrome is a pituitary obesity with congenital malformations especially poly-dactylism. A waddling gait is present along with genital dystrophies and atresia-ani. Retinitis pigmentosa is atypical as is night-blindness and optic atrophy. There is a skull deformity in most cases covering a subnormal mentality. An enormous appetite for sweets exists. Several children in the same family may be affected.

Pituitary headache usually occurs in women of the long-legged and short-waisted build. These women are energetic and alert. Most of them have a history of menstrual disturbances, such as amenorrhea, dysmenorrhea, and menorrhagia. The onset is at adolescence, the first year of married life, or subsequent to childbirth; the condition is directly linked to dysfunction of the gonads as well as of the pituitary. Reports show a great varience in cases.

The most common disease of the posterior lobe is diabetes insipidus. The primary cause is abnormality of the posterior lobe or the pars intermedia. The secondary cause is injury or disease of the central nervous system[1] such as a fracture, basilar meningitis, and tumors of the hypophysis. The onset of this disease is insidious, and the symptoms are polyuria, polydipsia, water intoxication, and dehydration of other structures. The x-ray will show an enlargement of the sella turcica or a suprasellar tumor or basal fracture. The B. M. R. is low in less than 50% of the cases.

Diabetes insipidus in infants is different from that of adults. Under 2 years of age there is an absence of polyuria because of the loss of water through the skin and bowels, but after 2 years polyuria appears. There is dissatisfaction with breast milk, marked restlessness, frequent attacks of diarrhea, and noc-

turnal wakefulness that is relieved only after drinking water.

Christian's syndrome follows diabetes insipidus and embraces certain bone defects. It begins in early childhood with the bones of the skull being so decalcified that the cranial body is replaced by soft membrane. Polyuria and polydipsia follow the bone defects. Mechanical bilateral exophthalmus changes with posture and is greatest in the lateral recumbent position exists.

At birth the normal **ovaries** contain over 300,000 primordial follicles out of which approximately 1000 become ova. The balance develop into what is known as atresic follicles or, in other words they reach the ripening stage and retrogress. The atresic follicles are formed into interstitial glands. From puberty to the menopause there is continuing evolution and development of these follicles until the climacteric is reached. Between birth and puberty the atresic follicles secrete hormones that control normal development. Castration before puberty causes hypertrophy of the pituitary and prevents normal genital development. This is true because normally the gonads restrain the pituitary. Castration removes gonadal control; ossification of the epiphyses is then abnormal with more than normal growth in the long bones. Tallness is common among early castrates together with hypotrichosis.

The development of the Graffian follicle and ovulation renders the ovary an excretory organ, but after this takes place the corpus luteum secretes an incretory hormone known as progestin. During the time that the Graffian follicle is being developed and prepared for ovulation, and from that very follicle and others in earlier stages of development, another powerful incretion known as the ovarian follicular hormone is produced. From the time of ovulation the corpus luteum grows until just before menstruation when, if the ovum is not fecundated, it retrogresses rapidly for about 8 days, and a new corpus luteum is ready before this retrogression is complete. The retrogression of the corpus luteum is coincident with the establishment of menstruation. However, should the egg become fertilized the corpus luteum becomes the corpus luteum of pregnancy, and continues to grow until after the first half of term when it withdraws and its duties are taken over by the placenta. Corpus luteum inhibits ovulation and is responsible for the placenta.

The ovarian follicular hormone with the corpus luteum hormone form the ovarian impulse in the menstrual cycle. They are delicately interrelated and dysfunction of one or the other upsets the normal menstrual cycle. There has been a tendency until lately to overlook the corpus luteum factor in the treatment of various menstrual difficulties.

The 4 hormones properly interrelated for normal menstruation are prolan A (gonadotropic) from the anterior lobe of the pituitary stimulating the ovarian follicular hormone, and prolan B (gonadotropic) also from the anterior pituitary stimulating the corpus luteum. The ovarian follicular hormone and the corpus luteum and the hormones of the pituitary have a delicate system of stimulation and inhibition flowing between each other in the form of hormones that keep the glands functioning normally. It is through the use of the inhibiting influence of the ovarian follicular hormone on the pituitary that many of the ills of the menopause are checked.

Amenorrhea is either: (1) physiological, such as before puberty, pregnancy, etc.; (2) pathological such as caused by tuberculosis, cancer, etc.; (3) functional such as caused by fright, cold, shock, etc.; and (4) endocrinopathic. We are only interested in the endocrinopathic amenorrhea such as would be caused by hypo-pituitary, hypo-gonad, hypothyroid or hyper-thyroid imbalance.

In hyper-ovarianism the pituitary is probably synergistic. In this condition in preadolescence there is early menstruation, precocious enlargement of the breasts, early pubic and axillary hair, development of the external genitals, and rapid bone and skeletal development sometimes ending abruptly.

Post-adolescent hyper-ovarianism is usually "uterine insufficiency" unexplained by any known anatomical cause. Increased libido, prolonged menstruation, and softening of the bones are symptoms. Pathologic causes if known should always be corrected before treatment with organotherapy.

In a pre-adolescent hypo-ovarianism caused by eunuchism there is a failure of the breasts and genitals to develop. A group of symptoms

closely related to the pituitary syndrome, such as tallness, Frohlich's type, no menstruation, hypotrichosis, and lack of libido are present.

Early eunuchoidism produces tallness, absent or delayed menses, retarded or delayed secondary sex characteristics, small hypoplastic uterus and oligomenorrhea. Two contrasting body types may exist with one being obese, pudgy and with large breasts, while the other is tall, slender, anemic, narrow at the chest with immature breasts, and with long fingers and long slender feet.

Adult eunuchism or late castration is the most severe between 20 and 30 years of age. The symptoms are atrophy of the genitals, followed promptly by amenorrhea. Large coarse hairs are common on the chin and around the mouth. There are vaso-motor disturbances such as hot flashes, profuse sweating and alternate sensations of heat and cold. The patient is often depressed, melancholy, restless, indifferent, and pessimistic. Insanity is rare.

Late eunuchoidism results in atrophy of the genitals, breasts, and retrogression of the secondary sex characteristics. Obesity develops in a few cases. There are no skeletal changes, but the vaso-motor phenomena is common.

Great advances and development in the uses of the cortical hormone of the adrenal have been made in the last 2 years. The extract from the medulla of the adrenals or adrenalin (epinephrine) has carved a definite niche for itself and little need be said about the medulla.

The adrenal gland is, in reality, 2 glands embryologically different yet within the same capsule. In a warm climate salt metabolism is, as a rule, overtaxed and hence the adrenal glands and their functions are of prime importance. It is definitely established that the adrenal gland regulates the sodium chloride metabolism. Salt therapy in conjunction with the administration of the adrenal cortex extract is indicated almost without exception.

Hyperadrenia points to a tumor and if congenital causes the syndrome of external pseudohermaphrodism. In early childhood the symptoms are pubertas precox, macrosomia precox, precocious growth, and strong muscular development with infantile proportions. In adolescence there is a hypertrichosis of the masculine type with the female being most commonly affected and suffering an exaggeration of the male characteristics at the expense of the female. In an adult there will be a hypertension and cardiac hypertrophy. Obesity is common. Transitory glycosuria exists. Sexual development in women frequently will be accompanied by masculine transformation.

Hypoadrenia of the true type would be classical Addison's disease. I venture to say that not 1 doctor in 10 has treated Addison's disease but I think I can say definitely that not a day passes in which cases of hypoadrenia do not come to the majority of our offices seeking treatment. True! These are mild. Hypoadrenia is a condition quite common in the warm western and southern states.

Hypoadrenia means that everything is low. The basal metabolism rate and blood pressure are low. The person's mentality is dulled. The cardinal symptoms are: (1) pigmentation, patchy, usually under bands, garters etc. Sergents white adrenalin line is positive; (2) a low basal metabolism is present; (3) the asthenia of hypoadrenia affects the circulatory system giving persistent hypotension, dizziness, fainting spells, cold sweating spells, and hypothermia; it also gives muscular weakness coupled with pain in the back and neck, a tendency to tire easily, vomiting, diarrhea, and epigastric pains. There exists in approximately 50% of the cases anacidity and in 25% subacidity; (4) the strain of the general asthenia develops an intellectual asthenia as a rule by affecting the nervous system. Apathy is frequent.

The structure of the cortex of the adrenals closely resembles the structure of the interstitial cells of both the testis and the ovary. There is undoubtedly a close functional relationship between the gonads and the adrenals.

In conclusion: the above mentioned indications comprise the more salient symptoms and if the practitioner creates a habit of noticing even the gross endocrinoses it will be a habit well cultivated. The large laboratories can run experiment after experiment, the specialist in the field of endocrinology can write the most extensive of reports, but if the doctor on the "firing line" does not understand and does not use these findings the advancement in endocrinology has not done what it should.

DISCUSSION

Leslie R. Kober: The human body is not a group of separate systems, but a beautifully integrated whole which functions smoothly and with a remarkable power of adapting itself to a great vari-

ety of conditions. The role of the nervous system in regulation is of great importance, but in addition there is a humoral control which depends upon "internal secretions" of the ductless or endocrine glands. There is hardly a function of the body which is not influenced or regulated by one or more of them. In addition, nutrition, metabolism, digestion, cardiac, respiratory, renal, hepatic, and hematologc functions are controlled through their influence.

It must be emphasized that our knowledge of endocrinology, and in a broader sense neuro-endocrinology, is a subject of comparatively recent date. It is true that a fragmentary appreciation that these glands played a role in regulating the organism was long suspected and there was considerable theoretical speculation concerning their function. This was to some extent clarified by experimental methods through removal of animals' glands and deprivation effects noted. This was a pronounced step forward, but when translated to the syndromes met with in clinical medicine, it led to an era of the wildest and most unwarranted conclusions which did much to discredit and hamper the progress of this branch of medicine. The introduction of biochemical methods was required to bring sanity after this orgy of unjustifiable speculations and conclusions, and even yet this has not been completely successful.

Many cases are met in the practice of medicine where the principal features indicate what has been taken to be an established clinical syndrome. However, as these cases are studied more thoroughly and more critically, there emerge evidence of perversions, excesses, or reductions of other functions. Their recognition may not be difficult, but the reason for their existence is by no means always explainable on our present knowledge. Therefore, if all cases encountered in practice do not fall into the groupings as outlined by Dr. Grow, it may be because the combinations and permutations which arise from the disturbances of function of these glands are of extreme variety. It is well to have a brief outline of the various endocrine disorders, such as Dr. Grow has presented here, well in mind in order to realize the general type in which any individual patient may be placed, preparatory to a more thorough understanding of him as a patient. But while keeping the endocrine type in mind, don't neglect to determine that this patient may have appendicitis, infected teeth, or other serious organic ailment; or there may be a definite psychosis.

I take issue with Dr. Grow in his statement that through commercial literature and only through this literature can the practicing physician keep up with this rapidly growing field of endocrinology. Too often have we allowed these supersalesmen to mislead us into prescribing unproven and worthless substances for patients who have paid high prices for something which if they had been ground up and mixed with a little horse brain and fed to the prescribing physician, might have had more effect in producing horse-sense.

Dr. A. K. Duncan: To be a good endocrinologist a doctor must be a good internist, and to be a good internist he must be a good endocrinologist. There is always a question as to which gland is causing the deficiency—whether adrenals, thyroid, gonads or what. It often is impossible to say that this or that is or isn't so. There must be much observation and study in any new work. I am glad to see such papers appearing on our programs and hope there will be more of them.

Dr. Ralph L. Hoffman: In no place in medicine does its philosophy reach the peak it does in endocrinology. The earlier writings of some authors, particularly Novak, are filled with fanciful theorizing. Recently some writers have come down to earth and are more practical. In gynecology we have an experimental laboratory for endocrinology. Results are easily and more simply checked in the gynecological disorders than in some others. Potent pituitary extracts exist in the form of antuitrin S. Active estrogenic hormones are also available. There are injection forms. The follicular hormone has been long available; only more recently an effective corpus luteum hormone has been prepared. These are for hypodermic injection and do not work by mouth. Occasionally rare forms of dysfunction are seen, as in the masculinizing tumors—the arrhenoblastomas; remarkable recovery—return of femininity often follows their removal. Hormones in gynecology are now effective, practical therapeutics.

Dr. E. Payne Palmer: With the use of folliculins one must look for pre-cancerous lesions or early cancer signs for fear of producing cancer by this agency.

Dr. A. D. Lyon, El Paso: Forty years of observation would lead to the opinion that many or all symptoms relating to endocrinology are due to dysfunction rather than to the glands themselves; 40 years ago patients suffered from the same symptoms. They had to be relieved then as now and we had no grandular extracts. Often we approach from the wrong direction. When unable to pin the ailment down, go into the habits of the patient—eating, excretions, work, etc. The sympathetic nervous system should be considered as having much to do with these situations before it can be said that the glands themselves are at fault.

Dr. A. C. Dick: Just as immunology was misunderstood early in its history so endocrinology is now misunderstood more often than not. The situation will eventually show improvement. A little black-cigar, armchair research is needed to get us any place in the subject.

Dr. Grow: I appreciate the discussion very much and feel good suggestions have been offered. Within the more or less immediate future I believe we shall know much more about the subject of endocrinology than we do now. The discussion indicates that much thought and study is being given the subject.

ETIOLOGY AND TREATMENT OF CHRONIC ARTHRITIS

KIMBALL BANISTER, M. D.
Phoenix, Arizona

Forty years ago Osler in his text on medicine spoke of chronic rheumatism and arthritis deformans—the 2 conditions we now differentiate as osteoarthritis and rheumatoid arthritis. He stated that they were incurable diseases, of obscure etiology and recommended rest and hygienic measures only for their relief. Despite the fact that these forms—especially the rheumatoid type have increased alarmingly in incidence—or recognition since his statement—until recently we have still floundered around in the dark in their treat-

ment. We can not be certain that we are on the right course even now, but recent bacteriologic, roentgenologic and pathologic advances have pointed the way to what appears to be a rational conception and treatment based upon etiologic findings.

As late as 1930 the Committee for the Control of Rheumatism reported that they were not yet ready to classify the different diseases spoken of as rheumatic because they were not satisfied as to the etiology of the different forms. Volumes have been written since that date, particularly in regard to what we now call rheumatoid arthritis, and it is only proper that a disease that ranks with tuberculosis and cardiovascular disease as a disabling state should receive the combined attention of research laboratories and clinicians. It was not until early in 1932 that the following classification, based upon etiology, was accepted by those men and clinics of this country who were solely or largely interested only in arthritis:

1. Infectious
   a. rheumatic fever
   b. rheumatoid arthritis - atropic arthritis
   c. specific arthritis
2. Degenerative
   a. osteo or hypertrophic arthritis
3. Allergic
   a. serum sickness
4. Traumatic
5. Metabolic
   a. gout
   b. scurvy
   c. ricketts
6. Neurologic arthropathies, Charcots, hemiplegic, syringomyelia.

In this paper I am interested only in those 2 most common forms seen in the southwest—namely—osteoarthritis and rheumatoid arthritis.

Osteoarthritis - hypertrophic arthritis: This disease I shall dismiss with a few words. It is found chiefly in the fifth and later decades of life and usually in well nourished individuals. It is essentially a senescent disease and presents the picture of a degenerative process likened to gray hair and arteriosclerosis. No definite etiology is unknown but Dr. Francis Hall has advanced the theory of endocrine dyscrasia. He has found that in a series of over 100 cases the basal metabolic rate was below 10 in 50% and below 15 in 34%. Treatment with thyroid gland was of permanent benefit in 49% of those cases. It will be remembered that most of those suffering with the degenerative type are well nourished or obese. He accounted for low metabolic rate encountered in the rheumatoid arthritics as due to malnutrition and depletion and thyroid treatment was of benefit in only 16.5%. Physio-therapy and orthopedic treatment offers some relief in selected cases. Its course is progressive with advancing age as in other degenerative conditions.

Rheumatoid arthritis: For many years first one, then another investigator has isolated what he has considered the specific germ of this condition. These bacteria have been recovered from the nasal sinuses, tonsils, teeth, intestines, lymph nodes, blood stream and affected joints. The confusion produced by the multiplicity of findings has led to the acceptance of none by the majority of clinicians. Improved cultural methods, however, have in the last 3 years led to the finding of a faintly hemolytic streptococcus in material taken from affected joints and the blood stream in an increasing number of cases by clinics working independently of each other. Cecil, Nichols and Stainsby in 1929 first published their findings of 62% positive blood cultures and 67% positive joint cultures in rheumatoid arthritis. Their culture methods were assailed however, and only in the last 2 years has there been built up a mass of confirmatory evidence to sustain their conclusions. Then in 1932, 8 investigators in a total of 736 cases recovered the streptococcus from the blood in nearly 43% and from the joint fluids in 33.7%. Since that report many others have confirmed the findings with even higher percentages with still more simplified cultural methods. It is due to these reports, together with the experimental results obtained in laboratory animals inoculated with these germs that the same men who in 1930 were not ready to classify rheumatoid arthritis as to etiology today place it in the list of infections. Furthermore, an increasing number of investigators place the blame upon a streptococcus which is usually faintly hemolytic but possibly transmutable on occasion.

Treatment: The medical profession of the southwest—and of Arizona in particular—has,

each year, seen an increasing number of hopelessly crippled arthritics dumped upon us. Who of us can deny that we have dreaded, in the past, to see such patients hobble into our reception rooms? Despite the pecuniary possibilities—if present—and most of these patients had none by the time they were sent us, we would willingly have referred them to our worst enemies for the simple reason that we could do so little to alleviate their distress. Do we still feel this way or do we now welcome them as we have learned to welcome the tuberculous, because we can hold forth some hope that improvement will be the lot of a large percentage? Perhaps I am too optimistic; but I must admit that my attitude has completely reversed within the last 2 years; what can we do for them?

Rest: Just as it has taken many years to teach the medical man as well as the public the benefit to be derived through rest in tuberculosis so it will take the same constant reiteration to teach both the value of rest in arthritis. Our problem may be more difficult because we cannot stress the alternative of death or cure as we can in tuberculosis. I am not so sure that the choice of alternatives in arthritis is to be preferred. Modified and controlled rest will certainly do much toward affecting relief in the arthritic.

Drugs: Of the hundreds of heralded cures and reliefs with which the pharmaceutic houses flood the literature and our offices I have yet to see 1 live up to it's promises. In my experience acetyl-salicyli cacid or amidopyrin top the list of palliatives. There is certainly no specific drug.

Diet: It has been clearly established that a highly nutritious diet low in carbohydrates is benificial to these sufferers. Proteins and fats must supply the necessary calories. These patients are frequently undernourished—very possibly because of an insufficient vitamin consumption. Those oils and food supplying A and B in greater quantities are indicated.

Heliotherapy: No doubt this treatment has its usefulness in the management of these cases. Its value probably lies in its tonic effect upon the general system in building up resistance to infection, rather than in any specific effect it has upon the affected joints. The same care must be observed as when used in treating tuberculosis.

Physiotherapy also has its place in our armamentarium. The increase in circulation of stiff and swollen joints is undoubtedly not only soothing but locally beneficial. Massage and managed exercise are also of value.

Elimination: I believe that this factor in the care of arthritics is usually slighted. By proper dieting and massage, and the proper use of catharsis when necessary a great deal can be done to relieve our patients. The removal of a focus or foci of infection have in most instances been diligently searched out and removed long before the patient is advised to go west. The intestinal tract, however, may be, and in many instances is, the cesspool which for years has been fed by the springs of tonsillar, nasal or alveolar infection and has in its turn become the happy resting place of the ubiquitous streptococcus. If there is anything in the allergic theory of arthritis then, in my opinion, the allergen hides here. Don't ask your patients in an absent minded way if their bowels are all right; see that they eliminate properly, and you will have done them an immense amount of good.

Surgery: Much can be done by the orthopedist towards correcting deformity and producing deformity for the comfort of the patient. An artificially and permanently ankylosed painless joint is frequently preferable to a painful moveable one—both in comfort and in use.

Vaccine Therapy: It is only natural that when a causative organism for a disease has been found a thereapeutic vaccine or serum should follow. We cannot yet be certain that the streptococcus is the cause of rheumatoid arthritis; but the weight of evidence in its favor is preponderating and vaccines have followed. Cecil and his co-workers, Wetherby and Clawson, Gray and Cowan, Berbank, Pemberton, and many other well recognized authorities have reported their results from the use of vaccines made from streptococci recovered from the blood or joints of arthritics. Each month the list of users and reported successes grows. If 3 years ago I felt more or less helpless in the care of an arthritic, today I feel confident in about the same degree that I can help him. It is the only addition to our inadequate forces;

and it promises much. Vaccines have been used for too short a time to state that they are curative. Many clinics, however, report excellent results as measured by relief of pain, increase in function of affected joints and decrease in swelling of these joints—all brought about by the use of streptococcic vaccines. Most clinicians use the intravenous method of administration; beginning with very small doses, increasing at weekly intervals and avoiding reactions.

My experience with this method of treatment dates back to January 1932, when I obtained my first positive blood culture from a case of chronic rheumatoid arthritis. In November 1931 Gray and Gowan of the St. Barnabas clinic for arthritis, Newark, N. J., by a slight change in method shortened the cultural time of Cecil from 4-5 weeks to 3-6 days. This made it available to all of us, and the Pathological Laboratory undertook to help me. My first attempt resulted in a positive culture and from that growth a vaccine was made, The patient was under treatment about 3 months and then stopped because she claimed to be cured. Her weight and general health improved concurrently with the decrease of pain and swelling and increase of movement in affected joints. Since that first case I have had an opportunity to treat about 20 other patients—10 under treatment at this time. I have had 1 frank failure after an initial startling improvement in a very severe case, and 1 early failure in a questionable diagnosis and improperly worked up case. All other cases have been greatly benefited and several will not stop treatment even though I have requested it. They are afraid of recurrences.

Let me explain what I mean by an improperly worked up case. We have at our disposal a number of laboratory methods, all of which should be used in the diagnosis, and management of a case of arthritis under vaccine treatment. The drawback to this procedure is the cost. By the use of these laboratory procedures we are able not only to make a more exact differential diagnosis of rheumatoid arthritis but also to check our clinical results with the test tube. I believe that when we are considering the treatment of a case of arthritis we should first of all make certain that it is of the atrophic rather than the hypertrophic type. An x-ray will in many instances help to differentiate those cases that are not clinically evident. Of more importance, however, is the agglutinating titre of the patient's serum toward the "typical strain" streptococcus. Different observers report agglutination in dilutions of 1:640 or higher in from 60 to 95% of rheumatoid arthritics' serum. Serum from osteoarthritis patients is practically always negative. In my more recent cases I have obtained agglutinations up to 1:400 dilutions against the typical strain streptococcus while these same serums failed to agglutinate several other varieties of streptococci from their own or other throats. During the course of treatment the titre rises rapidly in almost every instance in which the symptoms improve. If the treatment fails to help the titre also fails to improve and treatment may be discontinued. In other cases, improvement finally comes to a standstill and the titre gradually drops.

The sedimentation test is also useful, not only in diagnosis but in measuring the progress with treatment. Nearly all rheumatoid arthritis with symptoms of activity show a sedimentation rate exceeding 30 mm. in one hour —many more rapid than this—whereas osteoarthritis seldom varies from the normal rate. If treatment is helping the patient we have a periodic check and a reliable prognosis based upon the approach of the rate back toward normal. One other laboratory examination is useful. In osteoarthritis the nonfilament cells run to a normal percentage, while in atrophic arthritis there is a marked increase in this type of cell in 50 to 80% of cases. As the patient improves the count again approaches normal and here again we have a diagnostic and prognostic aid. Lastly we should take blood cultures in all cases, and joint fluid cultures when feasable. You will frequently be successful in recovering the streptococcus from one or the other source, and when after having a vaccine prepared you see the oft times remarkable improvement in your patient following its use you feel as I now do—unafraid to receive the rheumatoid arthritic in your office and may say to him, "I think I can help you."

3-9-37:

Since the above paper was written, I have treated some 25 patients with intravenous vac-

cine with great improvement except in very few cases. Some have not remained under treatment long enough to judge the results. With increasing experience I have become more and more impressed with the similarity between joint conditions and well recognized allergic reactions and am of the belief that the chronic rheumatoid type of arthritis is an allergic condition.

(This paper has been in the editor's files for a year or more because it was inadvertently handed in without the author's name appearing on it.—Editor.)

PREVENTION AND CORRECTION OF DEFORMITIES IN CHRONIC ARTHRITIS

W. PAUL HOLBROOK, M. D.
and
DONALD F. HILL, M. D.
Tucson, Arizona

(Read before the 46th Annual Session of the Arizona State Medical Association, Yuma, Ariz., Apr. 1-3, 1937.)

The first and important part of treatment in arthritis is the prevention and correction of deformity. Deformity is the curse that disables the patient. The competent physician with the cooperation of the patient can prevent most deformities. Instruction of the patient and appropriate measures by the physician must begin with the onset of the disease. Delay in the early stages means progressive deformity that is difficult if not impossible to correct. This places the responsibility for preventing deformities squarely upon the shoulders of the family physician; for it is he who first sees the patient. The methods for the prevention of deformity described in this paper are easily carried out even at home and can be instituted safely by the general practitioner. Correction of deformities is a much more difficult matter and should not be undertaken without previous experience.

In acute arthritis the necessity of bed rest is usually obvious. Rest the joints. Stop weight bearing on affected joints and stop strenuous use or trauma to joints, as this leads to continued irritation and destruction of the involved tissues. In practically all cases a non-sag bed should be used. Boards may be placed between the mattress and springs if necessary. It is important to start rest in correct posture. The patient is then to stretch out flat on his back, without pillows, for possibly 3 hours daily—1 hour after each meal. The time may be varied according to the stage of the disease and to the amount necessary to keep correct posture. Arms are spread out to the side or abducted with palms up. Sand bags or other prop is used to hold the feet upright and allow the patient to relax with his legs extended. It is important not to allow pillows under the knees, to cause ankyloses in flexion—a common mistake. Likewise, if the hands rest folded across the abdomen or chest, which is the comfortable position most patients assume, they are encouraging flexion contractions of the wrists and elbows. So, at least for 1 hour 3 times a day insist upon stretching in maximum extension.

Pain and a tendency to contraction is often so great that some support is needed. For the lower extremities nothing is better than the plaster paris shell. This is made by making a strong full leg cast from the hips down over the toes and then before it is too hard cut a long narrow strip out of the anterior surface with a sharp knife. When the cast is firm but not too hard, the walls are then spread just far enough to slip the leg in and out. The leg is removed, cast allowed to harden, and then covered with stockinet. Ready for use, it fits like a glove, affords rest to the spastic muscles of the entire leg and, quite important to the patient, relieves pain. The non-sag bed prevents hip contractions. Supports also may be made for the extended arms. It is important to remember that forced extension on the part of the patient without adequate support may produce pain that causes more muscle spasm and contraction.

Bed rest has not been used sufficiently in the past because of the fear of stiff joints. Many physicians advise their patients to walk regardless of pain and to keep up knee flexion contractions in the belief that joint motion is being preserved. Hence the patient, in fear of the wheel chair and often with severe pain, forces himself about, destroying the very joints that need rest. Joint motion and muscle tone must be maintained without increasing muscle spasm and deformity. This can be done if the

patient will practice a set of daily bed exercises from the very beginning of the disease.

Joint Motion and Exercise: At the onset of the disease, the patient should be instructed to move all of his joints through their greatest range of motion at least once daily. In the first week or 2 of the most acute or inflammatory types, this may not be possible without too much pain. At first then, and often for a long time it is necessary for an assistant to move each joint passively. Later, as the joints become less painful, the patient is able to move them through their complete range in his set of exercises. Muscle exercises also are started at the onset of the disease. The physician or a physiotherapist should instruct the patient in the correct exercise for every important muscle group in his body. In the acute stage the patient may be limited because of pain to only a few muscle groups that he can exercise once or twice a day without aggravating the disease. Soon, however, the average patient learns all the muscle group exercises and is able to do each 10 to 15 times in 2 or 3 periods daily. Thus, in bed, he not only improves his blood circulation but develops muscle tone and strength that will support joints when he is able to walk. A few active muscle contractions are worth a good deal more than any amount of massage. The list of exercises is developed according to the patient's individual needs. Generally, a full set is required, including arms and hands, legs and feet, chest, abdomen and back. Exercise of the extensor groups is ordinarily stressed more than exercise of the flexor groups. Exercises are always done on the bed and most of them while lying down. They are started with 3 movements each group once daily and gradually increased as tolerated. The exercise should always be slow and deliberate. With increased strength, resistance should be added. Resistance is best furnished by a trained physiotherapist, nurse, or even a member of the family. Little or no equipment is required. Rest after an exercise period is essential.

In brief, the patient should have a strict daily routine with definite periods for posture, rest, joint motion and exercises. With this well established the program should be checked regularly by the physician for additions and subtractions as they become necessary.

This program can be started in the first few days after the physician's initial examination, and not until it is started should he look to the second phase of treatment which is the attempt to arrest the activity of the disease. Constant attention to all of the many little details in the program will save hours of work and worry in correction of deformities later on. The physician must not only be on the job constantly for months and years with a given patient, but he must instill into the patient the ambition, drive and persistence in daily routine that is so essential to maximum recovery. The patient must have the desire to get well and realize that 50% of the job is up to him in his attitude and faithful maintenance of routine.

Correction of deformity should be labeled "correction of mistakes made by doctor and patient". With vigilance in prevention there should be little or no necessity for a knowledge of correction. Unfortunately, we still have to face this problem of correcting deformities. Many of the principles mentioned under prevention of deformity can be used in correction. First of all, muscle tone and strength obtained through corrective exercises are essential before any attempt at correction of deformity is made. If a flexed knee is straightened and loosened, it will not remain a movable, strong joint if there is not enough strength in muscles and supporting structure. Likewise, daily full range of motion and posture work must be instituted along with any other special procedures to which one may resort. Most of the minor and even some of the major deformities will respond to the routine outlined under prevention, namely: posture work, joint motion and corrective exercises.

It has been the general impression that manipulation of joints should under no circumstances be attempted during the active phase of the disease. However, many of these patients are in an active phase of the disease for months or years. It is true that the patient should first be improved constitutionally if possible, but recent experiences have convinced us that the hazard of waiting longer than a few weeks or months is far greater than the hazard of straightening a joint in any stage of activity.

In the early case it is often sufficient to use successive shells fitted to the legs as they relax and gradually extend. The latter is accom-

plished by making shell casts as described before without anesthetic or manipulation. With rest and relaxation in the cast the bent knee gradually straightens. Small felt pads are added under the tendon achilles just above the heel to take up the slack and increase the extension painlessly. If complete extension is not secured by this method in a few weeks, manipulation under anesthesia should then be done. The contracted joint is put in a better position which affords more rest and better circulation. Under gas anesthesia the early deformity can as a rule be corrected easily with the proper manipulation. In the case of a knee, it is then put in a full leg cast and held quiet for a week to 10 days. The cast is then opened anteriorly, as described before, and used as a shell; the leg is removed daily for joint motion and exercise.

To continue with the specific example of the knee joint, the remaining problem is the old contracted knee with shortened tendons, capsular adhesions and possibly subluxation. This type has failed to respond to the more conservative methods of shell casts, exercise, etc. Daily stretching by the physiotherapist has proved of no avail. If this joint has sufficient joint cartilage and does not show bony ankylosis, the next step then is as follows: all preparations are made for manipulation and surgery under anesthesia. Manipulation is first attempted, and if this is not successful—with the knee already prepared—a posterior capsulotomy is done. After the capsulotomy it is usually necessary to manipulate to break the intracapsular adhesions, correct subluxation and straighten the knee. It is then put in a cast for 10 days to 2 weeks, after which time the cast is opened and movement started. As soon then as the patient is strong enough to hold his leg in extension and can bear weight painlessly, he is started standing. That is assuming that his feet, hips and back are ready. The knees should be temporarily bandaged (ace bandage) for support. The feet are fitted with balanced and supporting shoes. The patient is put on his feet a few minutes each day and started shifting weight and exercising his legs and feet in place before he starts walking. Crutches are used to prevent unnecessary strain, teach correct balance and later, proper walking. As the patient improves in walking, the crutches are gradually discarded. Regular check-up examinations should follow indefinitely.

Time prohibits the discussion of management of the other joints as well as adequate detail. The methods in general that we have discussed have proved exceedingly helpful not only in securing useful joints ultimately but possibly in shortening the course of the disease.

Conclusions: The first and most important treatment in arthritis is the prevention of deformity.

Some of the more common methods for preventing deformities have been discussed.

The responsibility for preventing these deformities rests upon the family physician.

Correction of deformity is a more difficult problem, requiring special medical and surgical attention.

OPERATIVE CORRECTION FOR CONTRACTURES OF KNEES IN ATROPHIC ARTHRITIS

J. B. LITTLEFIELD, M.D., F.A.C.S.
Tucson, Arizona

(Presented before the 46th Annual Session of the Arizona State Medical Association, Yuma, Arizona, April 1-3, 1937.)

In handling contractures of the knees due to atrophic arthritis it has been my custom to cooperate with the internist throughout.

We see these cases after the damage is done. Deformities can be prevented by using proper posture in bed and general regime in the early stages, before demineralization, fibrosis and atrophy have occurred. Physicians who permit deformities are guilty of gross negligence in the majority of cases. We must allow for the physician whose patient is obstreperous, or ignorant, and who gets no cooperation from the one treated or his family.

With flexion contractures of the knees, a series of plaster shells often provide sufficient relaxation to secure correction of the deformity. Failure to secure correction may be due to shortened posterior capsule or adhesions in the joint. If by the use of posterior splints (relaxation casts) and physical therapy the knees are not promptly straightened in 1 to 2 months, further measures are essential and the following procedure is carried out:

with the patient under deep anesthesia to avoid voluntary muscle spasm, the joints are carefully manipulated and the deformities corrected. Occasionally more than one manipulation is necessary for complete correction. Plaster casts are applied and allowed to remain approximately 1 week, at which time the cast is spread and the leg taken out for assistive exercise. The casts are then used as posterior splints[1].

In flexion contractures of knees, manipulation alone cannot always be done safely to secure full correction of the deformity. In such cases the posterior capsule is short, thick and adhered to the joint and surrounding structures. There is marked shortening of the flexion muscles and tendons about the knee. The biceps femoris muscle particularly assists in flexion and external rotation. The semimembranosis, semitendinosis, and gracilis muscles are shortened. They are assisted in maintaining the deformity by the popliteus and both heads of the gastrocnemius. The short thickened iliotibial band is another powerful structure which helps to maintain the deformity. Too forceful manipulation on demineralized bones and joints will invariably produce fractures and may defeat the whole purpose of the procedure.

In approaching this problem surgically we use the method of posterior capsulotomy that was first reported by Dr. Philip D. Wilson in 1928 as follows:

"A tourniquet is first applied high on the thigh. An incision five inches long is made over the outer side of the knee, extending from the middle of the outer aspect of the femur, just above the condyles, to the head of the fibula. The skin and subcutaneous fat are dissected away from the underlying fascia and retracted, exposing the iliotibial band and the biceps tendon. The iliotibial band is sectioned transversely at a level about two inches above the joint interval. The biceps tendon is isolated for a distance of four inches from its insertion in the head of the fibula. The external popliteal nerve which emerges at the posterior surface of the tendon near the head of the fibula is identified, freed and retracted by means of a tape. The tendon is then split for a distance of two inches, and the two portions divided at different levels and turned back.

"This uncovers the lateral portion of the capsule of the joint. The posterior border of the articular margin of the lateral condyle of the femur can now be identified, and an incision is made through the capsule at this point opening into the posterior compartment of the joint. A sharp periosteal elevator is now introduced and the capsule and periosteum are stripped upward from the back of the femur. This incision is extended upward over the external condyle of the femur. The outer head of the gastrocnemius is separated, and the subperiosteal dissection carried to a point three inches above the joint, and inward until the midline of the femur is reached.

"At this point a second incision, of about the same length as the first, is made over the medial aspect of the knee, extending from above the abductor tubercle on the medial condyle downward to slightly below the joint line. The capsule at the posterior margin of the joint is incised and the posterior compartment entered. The subperiosteal stripping of the posterior capsule is now repeated from the inner side, being carried upward and outward until it meets the dissection previously made from the outer side.

"A long strip of gauze is then passed through the wound tunnel, the ends being brought together at the back of the knee to serve as a retractor. The knee is now flexed acutely, and the posterior structures retracted, so as to give a view of the lower end of the posterior surface of the femur. It is usually impossible, even yet, to completely extend the knee, and it is the tight capsular structures that still remain attached to the femur in the region of the intercondylar notch which constitute the impediment. These must be completely freed by subperiosteal dissection, and at the close it should be possible to see the entire trigonum of the femur, the femoral condyles, and the joint space widely open from side to side.

"The knee can now be straightened by gentle manipulation. It is necessary to stretch the contracted soft parts at the back of the knee and to break up whatever adhesions exist within the joint. The knee should be hyperextended and maintained in this position for two or three minutes, in order to make sure that complete correction of deformity has been obtained. With the knee extended, the external popliteal nerve should be palpated to be sure that it has not been put under too great tension. If the nerve appears to be tight, it should be freed to well beyond the neck of the fibula. We have had transient paralysis of the external popliteal nerve, and we consider that by precautions at this time this complication may be avoided.

"The tourniquet is now removed and the bleeding arrested. This is not very abundant, and presents no particular difficulties, with the exception of one vessel in the region of the intercondylar notch which is rather troublesome to ligate. The wounds are now closed. The ends of the biceps tendon are approximated in an elongated position and sutured with silk. The edges of the fascia are drawn together loosely, and the skin margins approximated carefully. Practically all dead space is obliterated when the knee is extended. Nevertheless, there is often considerable serous drainage, and a large dressing is required. The knee is fixed in the extended position by the application of a plaster casting, extending from the toes to the groin. This should be split immediately and separated to allow room for swelling."

On about the eighth day the cast is spread, the stitches removed and careful passive motion commenced. Voluntary exercises are instituted with the leg in the cast. This is done by teaching the patient to actively contract the quadriceps muscle or do the "patella pull". This muscle is in a weakened condition due to having been stretched so long, and it requires much patience to make it regain its strength. Usually by the end of 8 to 10 weeks of active

and passive motion, physiotherapy and massage, weight bearing is attempted. This is done at first on crutches, then with canes, etc., until the patient is able to walk unsupported. For about 10 to 12 months the patient sleeps in his casts to prevent a recurrence of the deformity.

We have operated on 7 knees by this method. In none of these cases was the subluxation completely corrected at operation, but the knees could be hyperextended beyond 180° in every case. The subluxation was corrected in all cases by a series of manipulations, with proper casting, and physiotherapy.

In one man, age 34, operated December 11, 1935, the tourniquet was left on over an hour and one-half. We believe the extensive sluffing of tendons and other tissues following this operation to be due entirely to this. Since that time, at 30 minute intervals, the tourniquet is loosened for 5 minutes. All cases have healed in 8 to 10 days by primary intention. The healing in this one case was prolonged nearly 5 months and he had areas of anesthesia in his leg. Today he is walking with a cane with his knee fully extended, and he can flex it to 90°.

A lady, aged 44, had both knees operated, the right one March 6, 1936, the left March 19, 1936. Prior to surgery both knees were contracted to 90° and had a range of motion of 10°. Now she is walking on crutches, with both knees in full extension, and she has a range of motion of 60°. She had been unable to walk for 8 years before surgery was instituted. The strength in her muscles is improving, but she does not feel secure without crutches. She uses them merely for balancing and not for weight bearing.

All of the cases had other joints involved, and most of them had become reconciled to bed-ridden invalidism. The new lease on life a patient gets when he finds he can walk completely changes his morale and gives him a determination to get well.

A lady, whose right knee was operated Jan. 21, 1936, died 6 months later from pulmonary embolism, following acute cardiac decompensation with acuricular fibrillation. Her wound had healed and her knee was straight at the time of death. We had permitted her to stand, but not walk, and we feel that the operation did not contribute in any way to her demise.

The other 4 cases operated are able to walk alone, without mechanical aid. Their range of motion varies from 45° to normal. All knees are straight, without subluxation.

Many of these cases were operated on before the inflammation became quiescent. Dr. Wilson insists on this phase before attempting surgery. Our good results on these mildly active cases may be due to their being financially able to afford adequate post-operative care, and to the mildness of our climate.

(1) W. Paul Holbrook: "Treatment of Atrophic Arthritis." J.A.M.A. 107:34-38, July 4, 1936.

ACUTE LARYNGOTRACHEOBRONCHITIS
(Case Report)

MAURICE P. SPEARMAN, M. D.
and
W. E. VANDEVERE, M. D.
El Paso, Texas

Acute laryngotracheobronchitis has been recognized under various titles, for many years. Morris[1] in 1917 reported 3 fatal cases of nondiphtheritic laryngeal stenosis following measles. Since that time cases have been reported by Baum[2], Schenck[3], Leigh[4] of El Paso, Mainzer[5], Spake[6], Silverman[7], Bradford and Leahy[8], Champion[9], Gittins[10], Cultra and Streit[11]. The literature on this subject is now fairly comprehensive.

Acute laryngotracheobronchitis has been defined by Richards[13], as "an acute descending streptococcus infection of the respiratory tract, characterized by a high febrile reaction, general toxemia, and an intense inflammatory change in the mucous membrane of the trachea, bronchi, and bronchioles, the latter accompanied by the formation of a sticky, gummy, often glue-like exudate or secretion, which partially or completely occludes the bronchial airways. The occluding secretion may extend upward to become attached to the glottic walls of the larynx or downward to fill the terminal bronchial capillaries and hence to produce an interstitial bronchopneumonia."

Etiology: The disease occurs almost exclusively in children between the ages of 2 and 7 years, although Davis[14] has recently reported a case in a woman, age twenty-nine. The fall and winter months seem to exhibit a greater

frequency of the disease. Bradford and Leahy[8] and Smith[12] think that sex may play a part, as they report a ratio of males to females of 3:1 in a series of 71 cases. Smears and cultures from the trachea and larynx may reveal pneumococci, staphylococci or streptococci. Cultures of exudate from the bronchi usually show a hemolytic streptococcus, though rarely will a blood culture be positive for it. The Klebs-Loeffler bacilli are not found on either smears or cultures taken from the affected airways.

Pathology: Grossly there is marked edema and erythema of the mucous membrane of the larynx, trachea and bronchi. The vocal cords may be markedly swollen. The mucosa has a mottled red appearance throughout. The trachea and bronchi exhibit patches of thick, dirty exudate which may form plugs that block the lumen of smaller bronchi and bronchioles. It may need to be removed at times by forceps, as often it will not pass through the aspirating tube. Sometimes it forms casts of a part of the bronchial tree. Usually on exposure to the outside air this exudate partially hardens, resembling soft glue.

Microscopically sections of tissue show partial to complete necrosis of the surface epithelium. There is marked edema of the sub-epithelial structures. Accompanying this edema is a marked infiltration of round cells, principally of the lymphoid type, with an occasional polymorphonuclear leukocyte. The picture is that of an acute, all-pervading inflammation.

Diagnosis: The condition is most often confused with foreign body[1], diphtheria[2] and bronchopneumonia[3]. The history may or may not reveal preceding respiratory infection, although it most often does. The onset is sudden, marked by inspiratory dyspnea, a mild hoarseness, fever—usually slight, and restlessness. Direct laryngoscopy reveals edema of the cords and a bright red laryngeal mucosa. Usually no membrane is found. Smears are negative for Klebs-Loeffler bacilli. Examination of the trachea shows patches of a gummy exudate lying on a greatly swollen mucous membrane . As the dyspnea becomes more severe there is retraction of the supra-sternal notch, a sign of laryngeal obstruction. Diphtheria antitoxin may be given as a precautionary measure, but too much time should not be wasted on x-ray and laboratory examinations. As dyspnea progresses, there appears a peculiar pale cyanosis of the nail beds and lips. Restlessness increases, and the child ceases crying as the effort to breathe becomes more difficult. Finally there is violent retraction of the intercostal spaces, the supra-clavicular spaces, the epigastrium and the supra-sternal notch. The sternum heaves in and out with increasing rapidity. Coma intervenes late. The pulse gradually increases to a high rate. Early in the case the chest may exhibit almost no signs on physical examination. Later, signs of bronchopneumonia supervene. The fever may never go over 102°, except terminally it may reach 105° or 106°. If tracheotomy is performed the fever usually goes up 2° to 3° within a short time. If fever remains high the outlook is grave. We believe that if the fever comes down within a few hours after tracheotomy, the possibility of ultimate recovery is enhanced. Early in the course of the disease there is often a hoarse, dry cough which may lead to a diagnosis of croup. But the institution of treatment for croup is unavailing, and the child goes steadily down-hill if other measures are not promptly begun.

Needless to say, inspection of the larynx and trachea, by the use of the laryngoscope, should be done without anesthesia.

Treatment: There are both mild and severe types of laryngotracheobronchitis; given proper and prompt treatment, the chances are good that a mild attack may never enter the serious stage. No specific treatment is available; hence therapeutic efforts should recognize 2 objectives, viz: mechanical maintenance of open airways and enhancement of the general physical condition in the battle against the toxemia.

Tracheotomy should be done early, as soon as laryngeal obstruction, is evidenced by the retraction of the supra-sternal notch during inspiration. Tracheotomy should be a careful, deliberate operation. Never should tracheotomy be postponed until cyanosis sets in; then it is usually too late. If it is not, a bronchoscope should be inserted through the tracheotomy wound and the air passages searched for plugs of exudate. Often an inverted Y-shaped plug will be found over the carina. Upon removal of this plug, usually with forceps, the breathing becomes easier. The milder cases may need no further instrumentation than this;

but the more severe case will require bronchoscopy, through the tracheotomy wound, as often as dyspnea intervenes throughout the course of the disease. There is a tendency for the crusty exudate to form plugs farther down into the smallest bronchioles. Richards[13] says "one procedure, and only one can be utilized in this urgent situation and that is bronchoscopy with mechanical removal of the obstructing masses by suction or by forceps."

"Failing this, the bronchial lumen on one or both sides will rapidly become obliterated, air will be unable to reach the periphery of the lungs, steady asphyxiation will ensue in spite of everything that can be done, and the patient will die a death of suffocation, than which there is no more ghastly clinical spectacle." In one of our cases it was necessary to da a total of 10 bronchoscopies in order to remove the obstructing plugs of exudate from the airways.

Both mild and severe cases should be kept in a highly humid atmosphere. Croup kettles or pans of boiling water should be kept in the room. They are best treated in the hospital. Hum.d, warm oxygen may be given if an oxygen tent is available. Narcotics are taboo. A high tluid intake should be maintained. Enemata and other measures to prevent abdominal distention are necessary. An abdomen distended with gas seriously interferes with respiration and general bodily comfort. The inner tube of the tracheal cannula should be cleaned frequently. A frothy fluid may be brought up into the cannula with coughing. This should be removed, as often as it appears, by a suction tube made of a soft rubber catheter, of small enough calibre that it may be easily inserted through the cannula into the trachea.

Alkaline powders, such as sodium bicarbonate, are given by many physicians. Intubation rather than tracheotomy is advocated by a few men, althugh in most cases they usually resort finally to tracheotomy.

Blood transfusions are of doubtful value as is anti-streptococcic serum. Some men advocate large doses of diphtheria anti-toxin, even though diphtheria is ruled out, in the hope of obtaining some foreign protein reaction. We feel that these little patients have a sufficient load to carry without adding such a factor as this type of reaction.

Comment: Authors vary considerably in their estimates of the mortality rate of acute laryngotracheobronchitis. We believe that this variation may be partially accounted for by the fact that few have distinguished between the mild and the severe forms of the disease. In the aggregate, the mortality of the mild form is low—up to about 10%, and in the severe form from 50% to 90%. Many cases go to autopsy unrecognized. Could these have been diagnosed early and proper treatment instituted, the chances are that many of them would be alive today.

Since the family physician is most often the first to see these cases, he should be aware of the possibilities involved and not hesitate to call for consultation if in the slightest doubt as to the diagnosis of some puzzling respiratory affection.

We report herewith 4 of our recent cases of acute laryntracheobronchitis.

A male, age 5, had a slight cold for 6 days. On seventh day he complained of sore throat, began to cough, have dyspnea and slight fever. Dyspnea increased and parents brought the child to our office. He was hospitalized immediately and tracheotomy done. By this time there was cyanosis. No membrane was found in the larynx. Culture showed streptococci but no Klebs-Loeffler bacilli. Bronchoscopy was done through the tracheotomy wound to remove several glue-like plugs of exudate from the bronchi. Breathing became easier. Fever mounted from 100 to 103. Steam kettles were ordered. Hypodermoclysis of normal saline solution was begun. 50,000 units of diphtheria anti-toxin were given intra-muscularly. Fever continued high. Bronchoscopic removal of crusts from bronchi was done 6 times. He died on third hospital day.

A female, age 4, suddenly developed a croupy cough in the middle of the night, with increasing difficulty in breathing for the next 24 hours, when we were called. The child was slightly cyanotic on our arrival. Tracheotomy was done immediately and breathing became easier. Later that night we were called again to see the child on account of a sudden choking attack. Bronchoscopic examination through the tracheotomy wound revealed large, sticky masses in both main bronchi. These were removed with forceps. The breathing became quiet immediately and the

fever began to recede. The child was put to bed in a warm, humid atmosphere. Recovery was steady, and on the seventh day the tracheal cannula was removed.

A male, age 2, had sudden high fever, croupy cough with difficult breathing. He was brought to the hospital, where tracheotomy was done by another physician. Dyspnea was relieved slightly and we were called in consultation next day. Fever remained 103°. We advised bronchoscopy, and removed a large gummy plug of exudate from the right main bronchus. The breathing was immediately easier and the child fell into a deep slumber. At intervals of a few hours succeeding bronchoscopies to the total of 10 were done. Each time there was dyspnea and restlessness and large quantities of the characteristic gummy plugs were removed. The child was given warm, moist oxygen, hypodermoclyses, proctoclyses, enemata and fluids through a duodenal tube. The fever gradually rose from 103° to nearly 105° terminally. All cultures were negative for diphtheria but showed a hemolytic streptococcus. The patient died on the second hospital day.

A female, age 4½, had a slight cold for 4 days and suddenly began to breathe with great difficulty, and parents brought her to the hospital. Temperature was 100° on admission. Tracheotomy was done with bronchoscopic removal of a large plug of the characteristic exudate from the right main bronchus. The breathing became easy and the child went to sleep. She was kept in a warm, moist atmosphere. Temperature rose to 103° within 2 hours, then fell to 99° within several hours. Cultures from trachea showed only a hemolytic streptococcus. Recovery was slow, but progressive. The tracheal cannula had to be worn 3 weeks. Recovery was complete.

Summary: Acute laryngotracheobronchitis is defined and described. Points in its differential diagnosis are enumerated. An outline of treatment is given, emphasizing bronchoscopy as one of the chief measures. The high mortality of this disease is discussed. Brief reports of 4 recent cases are appended.

810 Bassett Tower.

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TUBERCULOSIS AND PREGNANCY

H. C. JAMES, M. D.
Tucson, Ariz.

Since the time of Hippocrates, it has been claimed that tuberculosis improves with pregnancy. There have been periods when marriage with subsequent pregnancy was actually recommended for tuberculous girls. While many tuberculous patients appear to improve throughout pregnancy there seems to be a tendency toward the aggravation of mild tuberculosis, or the activation of a dormant or previously unrecognized tuberculosis during the first 3 months of pregnancy.

At present, there is a great difference of opinion existing as to the influence of pregnancy on tuberculosis. Most obstetricians think it aggravates the disease, but internists disagree. Robinson, from a questionnaire answered by 200 tuberculosis specialists in Great Britain and abroad, learned that "all deny that pregnancy benefits tuberculous gravidae, 75% state that pulmonary tuberculosis is aggravated by pregnancy, latent infections activated, quiescent lesions lit up, active foci made more active." Matzgar states that "in true incipient cases practically without symptoms pregnancy will light up the active disease in 3% of cases. In healed tuberculosis, even of long standing, the outlook is not good. One pregnancy can be tolerated by 50%; a second pregnancy is most likely to aggravate the tuberculous condition; a third pregnancy may result in death. In active tuberculosis with only moderate involvement, 75% of cases are made worse by pregnancy, while in advanced active cases 90% die during the puerperium."

Ornstein and Kovnat, in a study of a large number of cases at the Sea View Hospital in New York City, have come to the conclusion that the bad prognosis did not depend on the pregnancy but on the character of the pulmonary tuberculosis. Their classification of tuberculosis is qualitative rather than quantitative and they found that all their deaths were in the caseous-pneumonic group.

After reading the unfavorable prognosis given by most authorities, one shudders at the idea of caring for or having to manage a case of pregnancy complicated by tuberculosis. **Because of the newer concept of the treatment of tuberculosis and the continued favorable reports on cases treated by collapse therapy, I believe that pregnancy complicated by tuberculosis need not of necessity hold the bad prognosis it once did, but might even be looked upon as a help in ultimate'y curing the tuberculosis.**

The treatment of tuberculosis with pregnancy naturally resolves itself into 2 main groups, i.e., preventive and active. Under preventive treatment most authorities will agree that tuberculous women should not marry, at least not until definitely proved to have been arrested for at least 2 years, and for those who are already married, avoidance of pregnancy for at least 2 years after definitely arrested. Modern contraceptive teaching, unless contraindicated by religious beliefs, has made the avoidance of pregnancy much more possible.

For the active treatment of pregnancy complicated by tuberculosis, there is a great diversity of opinion, 3 positions being held. First, all pregnances should be interrupted as a curative measure. Second, no pregnancy should be interrupted. Third, all cases should be individualized. The last position is the one I feel we should follow, keeping an open mind and interfering when certain symptoms indicate. There are, I believe, definite indications for abortion, such as fever, wasting, many tubercle bacilli in the sputum, hemoptysis and advancing consolidation, tuberculosis with hyperemesis, and laryngeal tuberculosis in early pregnancy.

The ideal method of handling pregnancy with tuberculosis is advising and carrying out sanatorium treatment as early as the diagnosis is made. If, after 6 weeks to 3 months of sanatorium regime, there is definite spread or increase in symptoms and physical findings, an abortion should be performed. If on the other hand the patent has remained stationary, or has improved, she should be allowed to go to term.

Both the fields of tuberculosis and of obstetrics are too large for one man to attempt to cover adequately or well. For this reason, no obstetrician should attempt to handle a case of tuberculosis with pregnancy by himself. A man well trained in the field of tuberculosis should be in constant care of this type of patient working in close cooperation with the obstetrician.

Previously the recognized treatment of tuberculosis was purely medical, consisting chiefly of bed rest, fresh air, and proper food. Now, however, in modern institutions about 80% of patients receive some sort of collapse therapy, permitting physiological rest of the diseased area. The surgical procedures most commonly used are pneumothorax, phrenic nerve interruption (temporary) and thoracoplasty.

The improvement often noted in pregnant women with tuberculosis may be compared with that noted in patients with ascites or large abdominal tumors. X-rays taken of patients with these conditions show that there is definite rise of the diaphragm coresponding to that seen with phrenic nerve interruption and in those patients who have been given pneumoperitoneum as an aid in splinting the diaphragm. It has also been apparent from fluoroscopic examinations of patients in all stages of pregnancy that with the rise of the fundus the excursion of the diaphragm becomes progressively less. From these facts we may deduct that when pregnancy is apparently beneficial to tuberculosis that benefit is being derived from the physiological rest caused by elevation of the diaphragm. Likewise, the rapid increase of the disease in tuberculous women during the puerperium may be explained by the sudden withdrawal of beneficial effect due to elevation of the diaphragm.

The management of labor and the puerperium of tuberculous women is probably the most important phase of all. During labor all efforts should be directed toward making the first stage as easy as possible. As soon as the

second stage has been reached the baby should be delivered with forceps, using preferably parasacral anesthesia. I feel it is definitely contraindicated to ask the tuberculous patient to "push" at any stage of labor. Hemorrhage should be reduced to a minimum. Within 24 hours following delivery some form of collapse therapy should be instituted, pneumothorax or pneumoperitoneum being the methods of choice; the collapse should be maintained as long as deemed necessary by the consultant; in this way the most serious complication of pregnancy can be overcome.

Summary: Pregnancy is a serious complication of tuberculosis.

Sanatorium care is important especially during early months.

Pregnancy, due to its effect on the diaphragm, may be an aid in curing tuberculosis.

Collapse therapy during the puerperium is definitely indicated.

A tuberculosis specialist should be in consultation constantly through pregnancy, labor and puerperium.

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INDICATIONS FOR COLLAPSE THERAPY IN PULMONARY TUBERCULOSIS

FRED R. HARPER, M. D.
Tucson, Arizona

(Presented before the 46th Annual Session of the Arizona State Medical Association, Yuma, Arizona, April 1-3, 1937).

Pulmonary tuberculosis is definitely a surgical problem based on collapse therapy. Collapse therapy should be instituted early in the course of the disease for the following reasons: (1) better results are obtained by starting collapse measures early; (2) a higher percentage of cases are permanently cured by using collapse therapy; (3) better results are obtained in a shorter length of time; (4) early collapse therapy often prevents spread of tuberculosis to other organs of the body; and (5) collapse therapy closes cavities and renders the sputum negative for tubercle bacilli, thus preventing infection of others.

Douglas, Nalbant and Pinner have shown that tuberculosis far advanced as to extent and excavation frequently develop within less than 6 months. In our series of cases the average duration of symptoms was less than 8 months. It is felt, therefore, that time is important and procrastination dangerous. The earlier effective collapse can be instituted the sooner will advance of the disease be checked.

According to Leslie and Anderson at the Michigan State Sanatorium, where collapse therapy is used in 73.3% of the cases, 47.3% were arrested or apparently arrested. In our series of 263 cases from the Southern Pacific Sanatorium, where collapse therapy was used in 75% of the cases, 39% are arrested or apparently arrested. Compare the statistics of the Michigan State Sanatorium and our statistics with statistics of the National Tuberculosis Association for the country as a whole, where collapse therapy is used in 10-15% of the cases. The arrested or apparently arrested cases according to their figures were only 17%. It, therefore, is obvious that collapse therapy is effective in curing pulmonary tuberculosis.

In the Southern Pacific Sanatorium we are permitted to hospitalize our patients for only 1 year without special permission. By using intensive collapse therapy we have been able to obtain negative sputa in 77% of the cases before discharging them. In patients under collapse therapy with negative sputa the danger of infecting the larynx or intestine by swallowing of infected sputum is much reduced. Furthermore, when the patients with negative sputa return to their homes they are no longer dangerous to their children or other members of the household. On the other hand, the patient with an open cavity and positive sputum is a constant menace.

There is a small group of cases in which collapse therapy is of no avail or definitely contraindicated. This group includes first, cases in which the pulmonary tuberculosis is so far advanced that effective collapse would leave an inadequate amount of functioning lung tissue; second, cases in which tuberculosis elsewhere in the body, incurrent disease, or ad

vanced age renders the patient a poor risk; and third, cases with certain types of hematogenous tuberculosis are not benefited by collapse therapy. This type of disease is most commonly found in Mexicans.

Types of collapse therapy: Pneumothorax is the best controlled type of collapse therapy. In the absence of pleural adhesions pneumothorax is very effective. In most cases it is the first method which should be employed. If the collapse is ineffective because of strands of pleural adhesions it can often be converted into an effective collapse by intrapleural pneumolysis. Pneumothorax can be unilateral, bilateral, or alternating. In 14% of our cases unilateral pneumothorax alone was used. In 5% bilateral siumltaneous or alternating pneumothorax was used.

Phrenic interruption is a simple procedure which is often used in early cases. Frequently very large cavities will be closed in a surprisingly short time with only phrenic paralysis. Temporary phrenic paralysis should be used almost exclusively in preference to phrenic exeresis. Phrenic interruption is sometimes used before pneumothorax, because pneumothorax to be effective should be continued over a period of months or years. In 28% of our cases phrenic alone was used effectively.

In many cases phrenic interruption or pneumothorax alone will bring about improvement in the patients' condition, but will not completely close the cavities. In most of these cases the addition of the other procedure will bring about complete cure. In 20% of our cases phrenic interruption was used in combination with pneumothorax.

Too much time should not be consumed in waiting for pneumothorax or phrenic to obtain results. If the patient is not definitely improving with these measures it is wise to proceed with thoracoplasty. Thoracoplasty is most effective in productive lesions with large cavities. It is least effective in exudative lesions. In some cases, when the cavity is large and thick-walled, with dense fibrosis, it is best to proceed directly to thoracoplasty without attempting minor procedures.

Conclusions: Pulmonary tuberculosis is essentially a surgical problem. It is best handled by combining early collapse procedures with careful medical supervision in a sanatorium which is equipped to give the patient strict bed rest plus facilities for adequate surgery. The type of collapse therapy to be used must be varied according to the indications in the individual cases.

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DISCUSSION

V. S. Randolph: I agree heartily with Dr. Harper that collapse therapy should not be delayed. If cavities are present the patient cannot be well until they are closed. Experience has shown that bed rest alone or sanatorium care does not close cavities as a rule that are bigger than an inch in diameter—sometimes not these.

In acute cases where there is involvement of one lobe or more but without cavitation, at times collapse therapy should be started when symptoms do not disappear quickly during bed rest.

I think that the large number, 75%, under collapse therapy in the Southern Pacific Sanatorium reflects the good care that these patients are receiving. In the better European sanatoria, as in the better institutions in this country, the percentage of collapse therapy is very high. The early use of collapse therapy not only reduces the time of treatment but returns a larger number of patients to active life.

It is our opinion that collapse therapy should be used whether the disease is unilateral or bilateral provided the patient has a sufficient amount of uninvolved lung tissue to carry on life.

The physician and surgeon should work in close cooperation as to the type of collapse procedures that should be used. I think all are agreed that pneumothorax is the most effective type of collapse when possible. Ineffective types of pneumothorax at times can be converted into effective types by intrapleural pneumolysis. This will give the patient the best possible chance of recovery. By this means a diseased lung may often be restored to use after healing has occurred. However, ineffective pneumothorax should not be continued nor, as Dr. Harper pointed out, should the simple phrenic nerve operation be depended upon to heal the diseased lung unless there is prompt and progressive improvement after this is performed. I believe that crushing is the operation of choice usually in these cases. I have seen a number of cases where permanent destruction of the nerve had been done but where upper lobe disease later yielded successfully to upper stage thoracoplasty. In these cases, had the diaphragm been functioning normally the patient's recovery would have been much better.

I should like to say a word of caution about the end result following phrenic nerve operations. Several years ago I reported striking closures of upper lobe cavities following paralysis of the diaphragm. In a good many of these cases after a lapse of 2 to 3 years there was reopening of the cavities. Therefore, I believe our results must be viewed with caution.

Although in many cases it is futile to expect tuberculosis to heal without surgery, I believe we also must keep in mind the value of medical measures in the treatment of tuberculosis both before and after surgery.

I should like to compliment Dr. Harper on his thorough-going summary of the indications for collapse therapy.

THE SERUM TREATMENT OF PNEUMONIA

PHILIP G. CORLISS, M. D.

(Presented before the Arizona State Medical Association, 46th Annual Session, Yuma, Arizona, April 1-3, 1937)

The physician who today treats pneumonia without pneumonia serum should be classed with the one who would treat diphtheria or meningitis without serum. It amazes me that so many physicians do not realize the effectiveness of pneumonia serum. I have had prominent, even eminent, physicians tell me that they have never used pneumonia serum. Others feel that it is of some value in certain cases if it can be given early enough. Some say, "the serum is so expensive; those poor people can't afford it, and the patients don't die, anyway—" Yes, the serum is expensive, but with a life at stake and the cure available, the price is really small. Furthermore, the proper use of serum so shortens the clinical course of the disease that I believe it is the cheapest method of treatment. As to the patients getting well anyway, we all know that pneumonia has a definite and high mortality. I have seen patients die from it every year but this. I have used serum in some cases for many years; this year I used it in every case.

My series of cases is not large enough on which to base important conclusions. I offer them for what they are worth and for consideration of certain points which they illustrate. There are 10 cases; all recovered. The serum was typed as soon as pneumonia was suspected and treatment was started with the proper serum as soon as the diagnosis was confirmed. While it holds true that the sooner the serum treatment can be begun, the better the response, I feel that delay in starting the treatment only necessitates the use of a larger amount of serum; the result is the same in all cases. Treatment in my series was started on from the 2nd to the 5th day of the disease, and the amount of serum required to produce a true and lasting crisis varied from 10,000 to 430,000 units.

The question of how often to give the serum is easily answered. Usually there is marked response to the serum—rise of temperature, often accompanied by most alarming chills and respiratory spasms, followed by falling temperature. In such cases I repeat the injection a few hours after the temperature has become normal, if possible. Otherwise the serum is repeated when the temperature starts to rise again. Injections are repeated until the temperature no longer rises. Some cases, especially advanced cases, do not react much to the serum. In these cases the serum should be repeated every 2 hours until the temperature and other signs become normal.

Case number 6 illustrates such a condition. 130,000 units of Lederle's type VII serum were given and the temperature and pulse had fallen almost to normal when we ran out of serum.

It took 48 hours to get serum from New York by plane, to continue the treatment and 300,000 additional units were required to produce the crisis. I feel certain that had we been able to give only a few more injections before we ran out, we would have cured this man more promptly; in the interim in which the serum treatment was delayed his pulse and temperature rose to their previous heights.

While it is always important to type the sputum and to give the specific type, if available, do not delay in starting the serum treatment. The serum prepared by the Lilly Company may be effective in treating other than types I and II because of the added heterphile units. Thus, in case 8, we thought we had type VII pneumonia, and no more type VII serum was available on the west coast. A re-examination of the sputum 2 days later showed type II as well as type VII pneumococci, and the patient made a rapid recovery with the use of Lilly's type I and II mixed serum.

The patient must always be tested for allergic sensitivity to horse serum. The preferred route of administration is intravenous, but I have had just as satisfactory results with intramuscular injections.

Despite the utmost care in administration—warming the serum to body temperature and injecting it very slowly—some patients will have terrifying reactions. Age does not seem to have any bearing on the severity of these reactions although elderly patients complain of them most bitterly and say they are not strong enough to stand another such reaction, while the parents of little children suffer if

they watch the reaction and sometimes beg you not to allow a repetition of such a performance.

The most common sequel to the use of serum is the general urticaria which occurs in the majority of serum-treated cases and usually begins in from 3 to 7 days after the crisis. It is severe and requires vigorous treatment for 24 to 48 hours. Morphine, adrenalin, ephedrine, and phenol-containing washes are all indicated. Some of the newer sera are so highly refined that this sequel is eliminated, but I have found that the most effective serum usually is followed by urticaria.

I do not believe that serum has any appreciable effect on the occurrence of complications. These 10 cases developed 1 case of empyema and 1 (number 6) of severe bilateral parotitis, pyelitis, and acute hemorrhoids. In past years I have had 2 other cases of empyema develop following recovery with use of serum and several otitis media cases.

Should the patient be moved to the hospital? I think that this depends chiefly upon the facilities for treatment at home. Whenever possible I keep the patient in his own home. I consider that the patient's chances are much better if he can remain under the care of intelligent relatives in a home equipped with electricity, hot water, comfortable bed, proper heat and ventilation, and QUIET. I do not hesitate to put two or more special nurses on the case as soon as the use of oxygen, hypodermics, or similar procedures are required.

The oxygen tent should be secured as soon as a large area of the lungs is involved, or if respirations become rapid or if there is toxicity or cyanosis. The heart should not be stimulated unless signs of failure are evident. If the rate is over 110 in adults or there are extra systoles and dropped beats I digitalize at once with massive doses. If the patient is used to alcohol, I believe he should have it in small amounts during his sickness. I have found best results with an high caloric, non-residue diet. Distension and other toxic symptoms do not often complicate the serum-treated cases. On the contrary, the administration of the serum usually results in the prompt passage of flatus, and after early reaction from the serum there is a remarkable mental clearing. Mild enemata are usually sufficient to take care of the bowels under this regime. Glucose solution should be given in-

PATIENT & AGE	TYPE	LOCATION DISEASE	X-RAY	DAY SERUM GIVEN	TYPE SERUM & AMT.	REACTIONS	COMPLICATIONS	ACCESSARY TREATMENT
(1) 8 yrs.	II	Right lower	No	2nd	I & II 20,000	None	None	
(2) 21 yrs.	I	Left lower	Yes	5th	I & II 40,000	None	None	
(3) 71 yrs.	I & II	Right lower	Yes	4th	I & II 50,000	None	Urticaria Hemiplegia	Digitalis
(4) 31 yrs.	II	Broncho-pneumo.	No	2nd	I & II 10,000	None	Urticaria	
(5) 58 yrs.	II	Left upper	Yes	4th	I & II 40,000	None	Urticaria	Digitalis
(6) 59 yrs.	VII	Right upper & mddle	Yes	4th	VII 430,000	None	Parotitis Pyelitis Hemorrhoids	Oxygen Intravenous glucose
(7) 47 yrs.	I & II	Left lower	Yes	3rd	I & II 30,000	None	None	
(8) 8 yrs.	VII & II	Right middle & lower	Yes	3rd	I & II 30,000	Severe chills & resp. spasms	Urticaria	Oxygen
(9) 46 yrs.	I & II	Right lower	No	3rd	I & II 30,000	Severe chills	None	
(10) 7 yrs.	II	Right middle	Yes	3rd	I & II 40,000	Severe chills & resp. spasms	Empyema Urticaria	

CHART: Ten cases of pneumonia, all of which recovered, treated with specific pneumonia serum. (Winter 1936-37)

travenously if the crisis cannot be produced within 24 hours and fluid intake is not considered sufficient or if toxicity and its accompanying symptoms appear.

In conclusion; I repeat my conviction that if you are sure of your pneumonia type, and you have the proper serum available, don't hesitate to use it in sufficient amounts. I believe that your efforts will **ALWAYS** be rewarded with success.

Dr. Melvin Lloyd Kent: Dr. Corliss' report was most interesting. It seems to me that the film showed definite violation of the proper treatment for pneumonia. The patient sat up in bed for strapping, whereas the patient should always be supported during the primary examination. The patient was unduly exposed and also unduly active throughout many of the scenes pictured. Such films, to be valuable to the physician, should demonstrate steps in the care of the patient most carefully.

THE TREND OF CANCER INVESTIGATIONS

as manifested by
The 2nd International Cancer Congress
by

E. PAYNE PALMER, M.D., F.A.C.S.
Phoenix, Arizona

The trend of cancer investigations as manifested by the proceedings of the congress, and shown to be attracting cancer research workers at the present time, are the carcinogenic agents, tumors transmissible with viruses, factors of pre-disposition and of resistance to carcinogenesie, laboratory diagnosis, chemotherapy, organotherapy, improvement in radiological and surgical treatment, and the social campaign against cancer.

Doctors Kennaway, Cook, and collaborators of the Royal Cancer Hospital (Free) London, presented a report entitled "Chemical Compounds as Carcinogenic Agents". For this they received the award of the prize offered by the International Union Against Cancer for the best presentation at the Brussels Congress.

The various groups of carcinogenic chemical compounds were classified and discussed in the light of their chemical relationships and their biological effects. The most active cancer-producing compounds yet encountered belong to the cholanthrene group and are of special interest on account of their relationship to the bile acids.

Recent work of Japanese investigators has shown that pathological effects (cholangioma, adenoma of the liver, hepatoma, and carcinoma of the bladder) can be produced by feeding experiments with relatively simple azo-compounds.

Little progress has been made in elucidating the mechanism of cancer production by chemical compounds, but it is possible to enumerate a number of genetic and other factors which influence carcinogenesis. Many dfferent media are important.

Cancer production by 5 compounds in a variety of tissues and species are summarized in a table, and the role of oestrin in tumor-production is discussed in some detail. The various systemic effects of carcinogenic compounds are described; and reference is made to the problem of lung tumors encountered in experimental work on carcinogenesis, to experiments on the transmission of chemically-produced tumors by cell-free materials, and to tissue culture.

Dr. W. E. Gye of the Imperial Cancer Research Fund, London, presented a report on "Tumors, Transmissible with Viruses."

The transmission of a fowl sarcoma by subcutaneous injection of a cell-free filtrate was first achieved by Peyton Rous in 1911. Rous and his co-workers examined more than 40 tumors of fowls, 5 of them, all sarcomata, being transplantable and also transmissible with cell-free filtrates. These 5 filterable tumors comprised 3 distinct histological types. Other types of filterable fowl-tumors have since been described by workers in other countries.

When filtrates of a fowl tumor are injected in animals of alien species, especially in large animals such as goat or horse, the blood serum of the injected animals acquires the power to neutralise active filtrates of the same tumor and of other filterable fowl tumors; furthermore, this neutralisation occurs in the absence of complement. The neutralising antibody is not removed from the serum by absorption with an emulsion of normal fowl-tissue.

When extracts of normal fowl tissues are injected in animals of alien species, the blood serum of the injected animals acquires the power to neutralise active filtrates of all filterable fowl-tumors; neutralisation takes place only in the presence of complement. The neu-

tralising antibody is removed by absorption with an emulsion of normal fowl-cells.

Sarcomata of fowls induced by tar or dibenzanthracene are not filterable, with the exception of 3 which have been studied by McIntosh, but indirect evidence has been obtained of a virus in these tumors.

The papilloma of the cotton-tail rabbit is caused by a virus which is able to infect the skin epithelium of the domestic rabbit. The papilloma, induced by the virus, usually becomes malignant if the rabbit is allowed to live more than a year.

Rous painted the ears of rabbits with tar; papillomata developed in about 3 months. The rabbits were then injected intravenously with virus obtained by filtering an extract of the papilloma of a cotton-tail rabbit. Two or 3 weeks later the tar papillomata became highly malignant, killing the rabbits 3 to 4 weeks later.

Lucke has shown that an adenocarcinoma of the kidney of the leopard frog is caused by a virus.

There were many interesting reports pertaining to factors of predisposition and of resistance to carcinogenesis. Among them was one by Dr. Maud Slye, Director Cancer Clinic, Sprague Memorial Institute University, Chicago, on "The Relation of Heredity of Cancer Occurence."

This was a report of a theory offered as an explanation of the mode of cancer inheritance. It postulates: (1) malignancy as an abnormal type of proliferation transmitted as a localized recessive character, each type of malignancy being a unit character capable of suppression by the dominant; (2) localization factors as physiologic characters of such a nature that they furnish the occasion for malignancy when they occur in tissues capable of malignancy and when the necessary inter-relation with the external causative factor arises.

An outline of this theory of cancer causation is: (1) one unit recessive genetic factor for each type of malignancy (carcinoma, sarcoma, leukemic diseases); (2) one unit recessive genetic localizing factor determining each site of malignancy; (3) external causative factors (environmental or intra-organic); (4) metabolic relationships; and (5) longevity.

The theory was explained by means of genetic charts involving 650 mice of a closely inbred strain. The results shown in these charts were so close to the expectation from the theory that they involved a corrected error of only 2 mice and 13.5 sarcomas of the subcutaneous tissues.

Throughout this work, there was no evidence of an extrachromosomal factor for either mammary gland carcinoma or leukemic disease. The material showed every possible assortment of the unit character for each type of malignancy and with every unit character for localization carried by the strain.

This material in its varied content of malignancy parallels human material in cancer occurrence. It would seem to be a possible explanation of the genetics of human cancer.

Genetic factors in the development of spontaneous and induced tumors in animals was well presented by Dr. Leiv Kreyberg of the department of pathology of the Norwegian Radium Hospital, Oslo.

The author confined himself to considering the influence of genetic factors in the development of breast cancer in mice, and to tumors induced by chemical agents, as the literature on the subject mainly deals with these tumors.

In mice a close connection has been revealed between the functional activities of the ovaries and the development of spontaneous breast cancer. Even in male mice breast cancer can be induced by castration and subsequent implantation of ovaries or by repeated injections of folliculin. There are marked familial differences in regard to the susceptibility to breast concer. Extensive and varied experiments have been made to reveal the strictly genetic side of the problem, as well as the role played by the mammary tissue, the ovaries, and general factors. Researches into a connection between certain structural characteristics of the mammary gland, or functional activities of the ovaries, as shown by their hormonal influence on the one hand, and the familial tendency to develop breast cancer on the other, have yielded mainly negative results. The evidence seems to show that spontaneous breast cancer in mice is an equivalent in principle to the induced tumors. The only difference between these lies in the fact that in the former the agent is of an intrinsic and physiologic origin.

As far as induced tumors are concerned, marked familial differences have been established in the tendency to develop them. The available material seems to indicate that the susceptibility to develop spontaneous breast cancer, lung tumors, and induced tumors is genetically different, and that the tumors in question have no connection inter se.

As regards the strictly genetic side of the problem, it cannot be maintained that the susceptibility to cancer development is dependent upon a single mendelian factor. Spontaneous chromosomal as well as extra-chromosomal or cytoplasmatic factors may be involved.

Cancer diagnosis as carried on in the laboratory was the subject of many interesting papers.

Problems in histological diagnosis was well presented by Dr. James Ewing, of the Memorial Hospital, New York. He stated that the main practical object is to establish the histogenesis. Unless the origin of the tumor is determined, the clinical significance of the case remains uncertain, whereas when the histogenesis is known the clinician is able to predict the probable course of the disease, anticipate the usual extensions and complications, and can direct treatment intelligently.

Serological diagnosis was presented by several. It is of interest that more than 50 reactions are proposed. Among the outstanding papers read was one by Prof. Pietro Rondoni, Director of the Institute of Cancer Milan.

Prof. Rondoni reviews the principal methods of serocytodiagnosis. First, are those based on the classic immunization technique which presupposes in the tumors the presence of antigenes that are serologically differentiable from animal groups and organo-specific antigenes; these substances are not found in all tumors, but serological analysis and various observations have shown haptenes of a specific lipoidic nature or special connecting or distributed lipoids in the tumors. However, it has not been demonstrated that there is a formation of antibodies against tumoral antigenes in the tumor-bearing organism; and the techniques of fixation of the complement, precipito-reaction, etc., have not been of real utility. The author then reviewed the various enzymatic reactions: those which seek for defensive ferments (Abderhalden) aiming at the establishment of the digestive activity vis-a-vis of the biologically heterologous proteic material (Fuchs), and the cytolytic reaction (Freund and Kaminer) with its adaptations and pretended improvements. The fundamental phenomenon of cytolysis (on cancerous and embryonic cells) in the presence of numerous homologous or heterologous sera, and its diminution in the sera of the cancer bearer and in some other diseases, as well as in the serum of pregnant women, is certain; but its significance is doubtful; the numerous reactions based on colloidal lability, which also lack in specificity, express easily-noticeable modifications, in relations between certain fractions of seroprotein (relative increase of globulins), and ought to be studied in the light of modern knowledge on chemics of plasmic protein.

However, we begin to foresee the possibility o fidentifying the qualitatively different types of colloidal labilizations of sera in the various physiologic and patholigic conditions. Neither have clinically useful results been secured from reactions aiming at the lipoidic metabolism, nor from any reactions based on divers principles. In view of the fact that a tumor in its early stage is likely a local disturbance, and humoral alterations generally secondary, it is hardly probable that we are near to discovering a precocious sero-diagnosis.

The radiological and surgical treatment of cancer was the subject of many reports. While practically all of them describe improvement in equipment and technique, there was no outstanding announcement. The congress did not fail to recognize that we have no curative remedies for cancer that can compete with surgery, x-ray and radium, and that in many cases of cancer all of these agents must be used in combination to effect a cure of the disease.

Hemotherapy and organotherapy were presented in an interesting way by a number of investigators. These reports were received with intense interest. Those present, however, who were thoroughly versant with these subjects felt that while progress is being made, much remains to be accomplished before satisfactory results can be claimed.

Attempts to influence cancerous tumors in man or in animals by means of chemicals or

organic extracts from healthy animals have yielded contradictory results.

Organotherapy is preoccupied in prophylaxis, but it is very doubtful whether it will be able to prevent the spontaneous formation of cancer. The progress of experimental tar cancers has been prevented by treatment with organic extracts.

Many interesting communications were presented pertaining to the social campaign against cancer, which is creating intense interest among both the medical profession and the laity throughout the world.

It was agreed that much good is being accomplished by state, national, and international cancer control through an educational campaign for the laity in general and the physician in particular so that the greatest possible number of patients carrying either pre-cancerous lesions or early cancer be directed to physicians and hospitals for accurate diagnosis and early treatment.

"TRIPPING DOWN MEMORY'S LANE" AFTER FIFTY YEARS OF MEDICINE

SAMUEL D. SWOPE, M. D.
El Paso, Texas.

A few years ago Harper's Bazaar published an article by Robert Barclay entitled "Tripping Down Memory's Lane." The article was a reminiscence of literary experience from the seventies to the time of writing. I have decided to plagiarize the title and apply it to experiences that have recorded memories of special events over the period of the fifty years that I have been engaged in the practice of medicine.

On the first day of March, 1887, I was handed my diploma, entitling me to pursue the science and practice the art of medicine and surgery, by my Alma Mater, the University of Louisville, Kentucky, which celebrates its one hundredth anniversary this year. I look back on this half century of service to humanity as a tale that is told of happy memories, and of experiences that have left no bitterness in a mind that has passed through the "sunshine and shadows" of life, and has already reached beyond the Biblical allottment when the sorrows of age are supposed to overwhelm mortals; and I am not overwhelmed.

We firmly believe that a man is as old as he feels, and I still have young feelings. I think it is generally understood that old men live in the past, mature men in the present and young men in the future. If this be the case, I hardly know to which division I belong.

My past, while not just an open book, contains many leaves to which I turn with profit and pleasure. As to the present, I am sure that I take a lively interest, and consider that I am alive in this wonderful age of progress. The future is most alluring, and I frequently find myself, with the young men here in my age of maturity, having dreams and seeing visions of the future.

Tiptoeing back to the past, my earliest inspiration in the medical world is still my ideal —Dr. J. Anthony Hodge, our family physician and my preceptor (an office that has been lost in the progress of medicine). He had all the qualities that Ian Maclaren could give his hero. I am still applying some of the lessons he taught for they have not yet lost their usefulness, and his picture still hangs over my desk.

In 1885 I came in contact with my first great medical mind—David W. Yandell, Professor of Surgery in the old University of Louisville, and the colleague and close friend of Samuel D. Gross. He was then in the early autumn of his eventful career. He had for his cronies Col. George D. Prentiss, the publisher of the Louisville Courier Journal, Col. Henry Watterson, the journalist, and Col. Will S. Hays, the poet. They met regularly at the Pendennis Club, and a more interesting quartet I think I have never known. They wore Prince Albert coats, southern wide-brimmed hats, and flaming red neckties. Yandell shaved his face in such a manner that the growth of his mustache extended down far on his lower jaw. This gave him the appearance of a fierce old bandit, and a fierce old bandit he was—eratic to the nth degree. His students adored him.

It became a part of my office at times to interrupt these worthies at their card games at the club, and when I dragged the worthy surgeon away it was with the scowls of four of the celebrities of the age following me.

(Continued in June Issue.)

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PROPAGANDA IN MEDICINE

In this issue we publish a paper by a member of the Arizona State Medical Association in which the statement is made to the effect that physicians away from medical centers are dependent upon literature supplied by drug houses for many of the advances in medicine. The one reference of his paper is to a publication issued by a biological supply house and he frankly states that the source of his information is from that and similar publications. The reader on first thought might be inclined to think that the editor should not have permitted such statements to appear in the columns of a reputable medical journal. Our first thought was to delete the remarks and reference as being not germane to the subject and a reflection upon the author and in turn upon sceintific medicine and certainly upon organized mediine and perhaps upon us. We left them in for the purpose of drawing a lesson from them.

We do not need to tell our readers if they read or even skimmed the paper on endocrinology in other columns of this issue that its author is an intelligent thinking physician trying to keep abreast of advances in medicine. He knows as well as any of us that the facts of his article were first reported in medical literature in scientific manner. What he did not say is readily inferred that a busy practitioner away from medical centers does not have access to the literature, if he had the time to read it. We are sure that he knows that an excellent digest of reliable data on the accepted facts of endocrinology was published not long ago in our excellent Journal American Medical Association. He might have said truthfully that what he and other busy physicians need is a "digest of the digest" put up in semi-popular style so that a tired physician could go to sleep on it for a few nights and become educated on the important subject of endocrinology while courting his much needed rest and sleep.

Laboratory physicians especially have been known to criticise practitioners for using treatments, notably in supposed endocrine disorders, that have not been scientifically proven. What is a poor physician to do when confronted with a problem-case and when his limited knowledge tells him that the only answer if any to the misfortune lies in endocrine therapy? Should he admit even to himself that only the laboratory worker in a medical center has a right to try to find an answer to such a problem as confronts him? Or should he consider that he has not only a right but a duty to do for his patient anything that may seem to offer even remote help. It must be remembered that the physician is on the firing line as it were and much like the soldier who was to do or die and not to ask the reason why must do something for a patient who asks for and needs help; because no one knows just how to give the help needed in that particular case does not excuse that physician from doing what may offer only a slight chance of saving his patient's life or what is more important of saving him from a living death.

We practicing physicians are not always entirely faultless. We often do not recognize the superior knowledge on a particular subject which a confrere has and because of jealousy or the need of the fees hold onto the patient

that the confrere could help. Then again we forget another duty which is that when we have learned a new fact we should put it onto paper and into print that other physicians and their patients may profit therefrom.

The answers to the problems propounded seem simple. It has been long and thoroughly recognized that there is a definite lag in getting useful proven knowledge from the foci of development of that knowledge to the ultimate consumers. It seems to us that organized medicine can and should have scientific clearing-house bureaus for diagnostic and therapeutic aids of one type or another. In these bureaus should be experts on propaganda. It is not enough to present the facts. They must be presented again and again with the most effective salesmanship methods. Organized medicine might well take a hint from the manufacturing houses. Detail men with nothing to sell but the latest of scientific advancements might be put out to call upon physicians even as the detail men of the "houses" do. Finances would be a problem but when enormous funds are available for all sorts of investigations suggested by "social scientists" it would seem that some of it might be obtained for medical scientists for the purpose of disseminating answers to some of the problems which they see.

A definite lag also exsits in getting the public to use physicians to their utmost ability. Here again is opportunity for propaganda. Only yesterday we heard a business man of far more than average attainments in reporting upon the work of a committee for underprivileged children, to his luncheon service club, say that the help obtained for a child was from a certain chiropractor who removed pressure from the back of the child's head. That man was talking seriously, believing what he said. Only a few years ago the president of a great university of the southwest proposed to his board of trustees that departments of osteopathy, chiropracty, and I believe he said optometry, chiropody and naturopathy, be added to his medical school. Our information is that this president had a great deal of determination and salesmanship and that he was not easily kept from doing what he proposed.

We wonder if the American Foundation could be interested in helping to propagandize physicians and the public along the practical lines we suggest. We used the term "social scientist" after Miss Lape who was the power in the mammoth study and report recently issued by the American Foundation. We have been wondering ever since reading several articles from Miss Lape's facile pen about the use of the term "social scientist." Perhaps the social worker is a scientist. We are not criticizing; we are wondering. We are wondering if we might suggest the next step for the American Foundation.

The American Association For the Study of Goiter will meet in Detroit June 14th-16th, of this year with headquarters at the Book-Cadillas Hotel.

Among the essayists are such well known names as W. A. Plummer, George Crile, C. H. Mayo, and F. A. Coller.

Dr. Arnold S. Jackson of Madison, Wis., will talk on "Needless Thyroid Surgery; an Analysis of One Hundred Cases"; Dr. George Curtis has a paper on "The Urinary Iodine in Thyroid Disease;" Drs. Voss and William B. Patterson of Danville, Pa., will present "Evidence that Most Thyroid Disease is Congenital." This should be a highly interesting meeting.

Resolution Adopted by the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association February, 1937.

WHEREAS, The eyes and the sight of the school child are of the most vital importance for satisfactory school work, and their preservation for future health and efficiency depends upon their wise conservation during childhood; and

WHEREAS, The school has a grave responsibility for the conservation of eyesight among school children; and

WHEREAS, School administrators in many parts of the United States are frequently besieged with demands for admission into their school systems of eye examinations and eye-glass prescriptions by practitioners other than qualified doctors of medicine; and

WHEREAS, The eye, as an organ of vital necessity, requires careful conservation and deserves treatment only at the hands of trained and competent persons; and

WHEREAS, Teachers and nurses properly may and often do make rough tests of visual acuity in the class-room, but diagnosis of diseases of the eye and of disturbances of vision requires more extensive examination and often involves treatment other than the mere fitting of glasses; and

WHEREAS, Even the fitting of glasses often requires the paralysis of accommodation through the

use of drugs popularly known as "drops"; now, therefore be it

RESOLVED, That it is the sense of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, in meeting assembled at New Orleans, February 23, 1937, that the safety of the eyes of school children, the adequate diagnosis of disease and the correct fitting of glasses require examination of children's eyes (beyond rough visual tests performed by teachers or nurses) by a licensed doctor of medicine and, upon his recommendation, by a medical specialist in diseases of the eye, properly known as an oculist or ophthalmologist.

AUXILIARY NEWS

The convention of the Woman's Auxiliary to the Arizona State Medical Association held in Yuma April 1, 2 and 3, was successful and enjoyable with 60 members registered. Phoenix was well represented.

The president, Mrs. J. M. Meason of Chandler, presided over the business meeting Thursday morning, April 1. Reports of the year's work showed steady progress, with the good news that the organization of a woman's auxiliary to the Yavapai County Medical Society had been completed. Mrs. Harry Southworth of Jerome is president of the new auxiliary.

Outstanding work was done for Hygeia last year with Mrs. C. R. Swackhamer as chairman. Mrs. Swackhamer had the honor of winning a fifty dollar prize given by our National for the largest quota of subscriptions to Hygeia as a member at large. Mrs. Swackhamer will direct our Hygeia work again this year.

Mrs. R. B. Homan and Mrs. Long of El Paso, Texas were guests at the convention. Mrs. Homan is state auxiliary president of Texas, and was the organizer of the El Paso Auxiliary. She gave an inspiring and helpful talk at our morning session, stressing the importance of Hygeia, physical examinations and public relations.

The following new officers were elected: president, Mrs. Charles E. Patterson, Tucson; president-elect, Mrs. W. C. Cain, Yuma; first vice-president, Mrs. H. P. Mills, Phoenix; second vice-president, Mrs. C. L. von Pohle, Chandler; recording secretary, Mrs. Harold Kohle, Tucson; treasurer, Mrs. Harry Southworth, Jerome; director, Mrs. J. M. Meason, Chandler.

The new president, Mrs. Charles E. Patterson, presided over the meeting Friday morning. Dr. W. W. Bauer of Chicago, associate editor of Hygeia and director of the Bureau of Health and Public Instruction, American Medical Association, was introduced and gave an interesting address on Hygeia. He paid high tribute to the work that is being done by the woman's auxiliary to the medical society.

We were elated over the announcement that an auxiliary to the Yuma County Medical Society would be organized immediately following the morning session. Mrs. C. R. Swackhamer acted as organizer and Mrs. C. W. Cain of Yuma was elected to head the new auxiliary. This is an encouraging start for our new year of work.

We were well entertained by the Yuma women with a luncheon, bridge tea, supper, banquet and dance.

Now for some very important news: our national president, Mrs. Robert E. Fitzgerald of Wauwatosa, Wisconsin, will be in Tucson May 8th, and wishes to contact as many auxiliary members of the state as possible. You will be notified of the entertainment planned for her; be sure to be in Tucson May 8.

The National Auxiliary meeting will be held in Atlantic City June 7. We hope Arizona will be well represented.

MRS. G. B. LITTLEFIELD,
Reporter.

NEWS ITEMS

Mrs. C. E. Patterson of Tucson, president-elect of the Woman's Auxiliary of the Arizona State Medical Association, took over the office after election at the convention in Yuma. Mrs. Patterson succeeds Mrs. James M. Meason of Chandler.

A number of Phoenix members of the Woman's Auxiliary, Arizona Medical Association, made a trip to Tucson during May to meet and hear Mrs. Robert E. Fitzgerald, Wauwatosa, Wis., president of the national auxiliary. The doctors' wives of Tucson gave a luncheon at the Santa Rita Hotel in honor of Mrs. Fitzgerald.

Miss Suzanne Sharp, 20-year-old daughter of Dr. W. S. Sharp of Mesa and Mrs. Maywood Sharp of Albuquerque, N. M., died April 27, 1937, in a Phoenix hospital after a long illness of heart ailment. A graduate of Mesa Union High school, she was a senior student at the University of New Mexico when she was taken ill.

Besides her father and mother she is survived by three sisters, Mrs. Joseph Robinson of Albuquerque, Mrs. Elmer Duffield of Mesa, and Betty Sharp, and two brothers, William, jr. and Harris Sharp.

Piloting his now cabin plane, which replaces one he cracked up in Lordsburg, N. M. several months ago, Dr. Joseph Madison Greer of Phoenix made a flying trip to Flagstaff April 18th for a consultation. He was accompanied by Mrs. Greer and a nurse. The three returned to Phoenix the same afternoon, the whole trip requiring but 70 minutes. He had recently taken delivery of his new plane, flying it from Toledo. He stopped en route at St. Louis for one day. From there he reached Phoenix in 12 hours.

Dr. M. Matanovich of Phoenix addressed the Hiram Club during April. His subject was "political and economic situation in modern Europe."

The American Foundation, with headquarters in New York City, made public a report "American Medicine—Expert Testimony Out of Court"; on the medical advisory committee for compilation of which two Arizona medical men served. (See the April issue for report.) This state's contributors to the study as members of the nationwide committee are Dr. Orville Harry Brown, Phoenix, and Dr. John F. Bacon of Miami.

Dr. C. Lawrence von Pohle of Chandler addressed the monthly meeting of the Baptist men's brotherhood in Chandler during May.

Dr. W. B. Carr of Williams, Ariz., was a visitor in Phoenix during the early part of May.

Dr. George A. Hays of Phoenix addressed the Optimists' Club on state health problems during April.

Geo. A. M. Tuthill, M. D., spoke on national defense at a meeting of the Daughters of the American Revolution during February.

Dr. Clarence E. Yount, Sr., city health officer of Prescott, attended the district meeting of the American College of Surgeons which was held in Denver, Colo., during April.

It was announced by Phoenix C. C. C. officials that Dr. Thomas M. Leahy of Chicago was assigned contract physician to a camp near Hillside, Ariz.

Dr. Orville Harry Brown of the Phoenix Clinic, who recently underwent treatment on the Pacific Coast, has returned to his office.

Dr. Franklyn Smith, prominent dentist of the Professional Bldg., Phoenix, and an intimate friend of many of the physicians of the state, was honored by being elected president of the Arizona State Dental Association.

Dr. Harry J. Felch, Phoenix physician, was program chairman for the Phoenix Hiram Club for May 12th.

Dr. R. J. Stroud addressed the Phoenix Hiram Club May 12th on the subject of "Why a Philatelist?".

Dr. and Mrs. W. O. Skeek of Phoenix have taken possession of their attractive Regency-design home recently completed, at the northwest corner of 7th St. and Verde Lane.

Dr. K. E. Steninger of Hayden with Mrs. Steninger and their two children, were visitors in Phoenix during the latter part of April.

Dr. Warner W. Watkins addressed the Parent-Teachers' Association of Creighton District during April on the subject "Alcohol and Narcotics."

Dr. W. W. Bauer of Chicago, director of the bureau of health and public instruction, American Medical Association and associate editor of "Hygeia," gave a lecture early in April on "Health for Today" in the Phoenix Union High School auditorium. This was presented under the auspices of the Maricopa County Medical Society and was free to the public.

Dr. R. J. Stroud of Tempe won a large copper trophy for having the most valuable and varied exhibit at the fourth annual convention and exhibition of the Arizona Federation of Stamp Clubs. The cup becomes a permanent possession when won three times.

Dr. Brown Pusey, eminent eye specialist and prominent member of Chicago social circles, was a winter guest at the San Marcos hotel in Chandler.

Dr. Fred G. Holmes was named a member of the board of governors of the American College of Physicians, at their 21st annual convention held in St. Louis during April.

Dr. A. N. Crane took over his duties as Arizona director of local health administration early in April. He succeeds Dr. George Hays whose resignation was recently accepted by Dr. George Truman, state superintendent of public health.

Dr. George C. Truman, Arizona State Superintendent of Public Health, spoke on social problems as related to health at a meeting of the Mesa Lion's Club during April.

Dr. Preston Brown of Phoenix addressed the Arizona Federation of Women's Clubs on the subject of "Cancer Control Through Education" in April.

Dr. William B. Watts, Jr. of Miami gave a travelogue on his recent trip to Europe as the high light of a meeting of the Gila County Medical Society during April.

Dr. T. C. Harper of Globe one of the delegates to the meeting of the Arizona State Medical Association gave a report on the convention to the Gila County Medical Society.

Dr. R. D. Kennedy, Globe, Ariz., one of the delegates to the meeting of the Arizona State Medical Association gave a report on the convention, to the Gila County Medical Society.

With Dr. F. L. Reese in the role of teacher, the Phoenix Lions Club staged a class in Arizona history at its weekly luncheon meeting. The class for the most part was composed of club members who are native sons of the union's "baby state".

When any member of the class failed to answer the question on Arizona history propounded to him by Dr. Reese, then some other member of the club was asked for the answer. For a time, the Lions thought Dr. Reese certainly knew his Arizona history; then it was discovered that the answers were written out on the slips from which he read the questions. His stock as a historian struck "rock bottom" immediately.

More than 70 members of the Indian Service Medical Society, composed of medical men of the United States Indian Service, held their semi-annual meeting in Phoenix April 16, 1937.

The session, held at the Phoenix Indian School was devoted to general discussions of medical problems and to the presentation of papers dealing with the latest advances in the control and prevention of disease among Indians.

Dr. W. A. Fahey, Tucson read a paper entitled "Tuberculosis" at the semi-annual meeting of the Indian Service Medical Society.

Dr. Bert Kempers of Albuquerque read a paper entitled "Pre-and Post-operative Surgical Care" at the semi-annual meeting of the Indian Service Medical Society held in Phoenix.

Dr. M. E. Burgess of Sacaton, Ariz., was elected president of the Indian Service Medical Society at the semi-annual meeting held in Phoenix during April.

Dr. John R. Brown of Sacaton, Ariz. was elected secretary to fill the unexpired term of Dr. R. H. Hancock, resigned, at the semi-annual meeting of the Indian Service Medical Society held in Phoenix during April.

Formation of a women's auxiliary was completed at the semi-annual meeting of the Indian Service Medical Society held in Phoenix during April. Mrs. Fahey of Tucson was elected president, Mrs. Foster of Albuquerque, vice-president and Mrs. Vietzke of Fort Defiance secretary-treasurer.

Dr. J. B. Eason has assumed his duties as Arizona director of maternal and child health after completing a training course at Ann Arbor, Mich.

OBITUARY

Dr. C. A. Donaldson, formerly of Mesa and county health officer there, died at his home in Tucson May 3, 1937, after a long illness.

Dr. Donaldson lived in Mesa for 10 years, moving to Tucson only two years ago. He came to Mesa from Chandler and carried on an active practice while there. He was formerly of Minneapolis, Minn.

Surviving are his wife and one daughter, Janet, both of Tucson, and two sons, Carey of Minneapolis and Dr. Charles Donaldson of Foley, Minn. Funeral services were held in Tucson, and the body was taken to Glendale, California for burial.

Dr. H. P. Mills of the Pathological Laboratory, Phoenix, spent the month of April in the east. He was in Chicago and was awarded the diploma of The American Board of Pathology. He later was in St. Louis and attended the meeting of the American College of Physicians. He also visited his son in Atlanta, Ga. who is teaching in a college there.

MINUTES OF MEETING OF YAVAPAI COUNTY MEDICAL SOCIETY, HELD APRIL 20, 1937

Dinner at the Hassayampa Hotel, Prescott.

Present: Drs. Taylor, Phillips, Hilton and Jolley from the Verde Valley; Drs. Tollesen, Herrick, Shearer, Herbig, Foster, Cobb, Menindez, Quinn, Vermilye, Brann, Chambers, McClintic, Waters of Whipple, and Drs. Looney, Swetnam, Bassett, McNalley, Born, Allen, Yount, Yount, Jr., Florence Yount, of Prescott.

The Groups presented their cases for discussion as follows:

Group 2, by Drs. Yount and Waters.

Group 3, by Drs. Phillips and Jolley.

Both cases proved to be highly interesting and instructive and the discussion presented by the Verde Valley Group was particularly logical and clear-cut.

The next meeting of the Study Club will be held in Jerome on May 18th.

There being no further business the meeting adjourned.

C. E. YOUNT, Secretary.

BOOK REVIEWS

WHY WE DO IT, by Edward C. Mason, M.D., Ph.D., F.A.C.P., Professor of Physiology, University of Oklahoma School of Medicine, Oklahoma City; The C. V. Mosby Co.; St. Louis; 1937; Price $1.50.

We have been so fed up on the sex-motive to explain all sorts of behavior, normal as well as peculiar, that a book which deals with the physiologic viewpoint of psychiatry is indeed refreshing.

Dr. Mason uses the outstanding governing principles of life which every physiologist knows is supreme in his own life and in the lives of those that he has had a chance to study. These factors are early training, subsequent training, the ego and the endocrine mechanism in association with that of the autonomic nervous system. One's ego is affected by the training both early and late. One's social development is also affected by these and by the peculiar slants taken by the ego.

The sex phase is not ignored, but it molds into those of the pituitary, thyroid and other endocrine glands.

His definition of personalilty is that it is "the sum total of all one has to meet the problems of life" including weight, sex, education, halitosis, dandruff, etc. It is these factors that make for a person's success or failure.

Regarding the feminine era, now well developed, he has a quotation concerning ladies which reads "they have ceased to be ladies and have not yet become gentlemen". This is a criticism of some of the advantages which some of the weaker sex sometimes assume.

Perhaps the strongest emphasis and the theme of the entire book is based more upon "spoiled children" than upon any other one factor.

We congratulate the author upon his splendid presentation of the subject. This book has but 177 pages, and yet there is crowded into it a tremendous amount of useful material for every physician or for every other person who will read it. The chapter on insanity is well worth the price of any physician's money.

The printers art is beautifully portrayed.

We recommend the reading of this book as compulsory home work for all physicians who wish to keep posted on new thoughts in medicine.

THE PRACTICE OF MEDICINE By Jonathan C. Meakins, M.D., Ph.D.; Prof. of Medicine and Director of the Dept. of Medicine, McGill University; Physician-in-Chief, Royal Victoria Hospital, Montreal; Formerly Prof. of Therapeutics and Clinical Medicine, University of Edinburgh; Fellow of the Royal Society College of Physicians, London; Fellow of the Royal College of Physicians, Edinburgh; Fellow of the Royal College of Physicians, Canada; Fellow of the American College of Physicians; The C. V. Mosby Co.; St. Louis, Mo; 1936.

Dr. Meakins has done an incredible amount of work in writing a modern text book on the practice of medicine. His having been with the department of Medicine in the McGill University and Associated hospitals is a recommendation for him and his book. The book contains 1343 pages and is divided into 21 chapters. He has made free use of illustrations, mainly photographs.

In pursuing various paragraphs here and there it seems that the author is strictly up to date and knows whereof he speaks.

The book is highly recommended to those who wish to brush up on general medicine and to have the latest information in a usable form.

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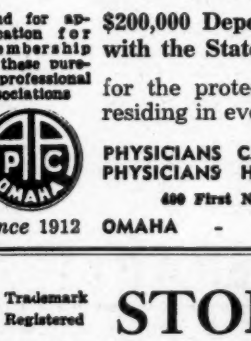

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BOOK REVIEWS

SYNOPSIS OF ANO-RECTAL DISEASES By Louis J. Hirschman, M. D., F.A.C.S., Ex-Vice President, A.M.A.; Ex-Chairman, Section on Gastroenterology and Proctology, A.M.A.; Ex-President American Proctologic Society; Professor of Proctology, Wayne University; Fellow (Honorary) Royal Society of Medicine; Extra-Mural Lecturer on Proctology, Post Graduate School, University of Michigan; Proctologist, Harper, Charles Godwin Jennings, and Women's Hospitals; Consulting Proctologist, Detroit City Receiving, Evangelical Deaconess, Wayne County Hospitals, etc., Detroit.; The C. V. Mosby Co.; St. Louis; 1937; Price $3.50.

This is a small book of 288 pages designed, written and illustrated to give physicians a working knowledge of all types of ano-rectal diseases.

This is a handy manual for those doing this type of work, as a practice or occasionally.

PREOPERATIVE AND POSTOPERATIVE TREATMENT, by Robert L. Mason, A.B., F.A.C.S., Assistant in Surgery at the Massachusetts General Hospital; W. B. Saunders Company, 1937; Philadelphia and London; Price $6.00.

The purpose of this book is to stress, as the title indicates, the importance of care previous to an operation and after it. The author recommends especially that there be cooperation and team-work between internist and surgeon.

The book is divided into 2 parts, general and regional. There are 34 chapters. A few of the titles are: The management of heart patients, the management of patients with hypertension and nephritis, the care of the surgical patient with diabetes, anesthesia, shock, blood transfusion, water balance and methods of parenteral administration of fluids, acidosis and alkalosis, postoperative peritonitis, thrombosis, etc.

The book should be read, especially, by surgeons and to them we recommend it and to those assisting in giving preoperative and postoperative care of patients.

The book is nicely illustrated, an excellent grade of paper has been used, and it has an easily, readable type.

The AMERICAN MEDICAL GOLFING ASSOCIATION will hold its twenty-third annual tournament at beautiful Seaview Country Club, Atlantic City, New Jersey, on Monday, June 7, 1937.

Thirty-six holes wil lbe played for seventy trophies and prizes in nine events.

The Atlantic City committee is under the general chairmanship of Dr. Walt P. Conaway, 1723 Pacific Avenue, Atlantic City, N. J., who so ably managed the 1935 Tournament at Seaview, and the 1935 Competition at the Northfield Club.

All male Fellows of the American Medical Association are eligible and cordially invited to become members of the A. M. G. A. Write the Executive Secretary, Bill Burns, 2020 Olds Tower, Lansing, Michigan, for an application blank. Participants are required to furnish their home club handicap, signed by the club secretary. No handicap over 30

is allowed, except in the Kickers' (Blind Bogey). Only active members of the A. M. G. A. may compete for prizes. No trophy is awarded a Fellow who is absent from the annual dinner.

The twenty-third tournament at Seaview promises to be a pleasant affair. The club is most elaborate. The officers anticipate two hundred medical golfers from all parts of the United States will play.

THE 1936 YEAR BOOK OF PEDIATRICS, Edited by Isaac A. Abt, D.Sc., M.D., Professor of Pediatrics, Northwestern University Medical School; Attending Physician, Passavant Hospital; Consulting Physician, St. Luke's Hospital, Chicago; The Year Book Publishers, Inc.; Chicago; 1937; Price $2.50.

The books published by the Year Book Publishers have become so well and favorably known that there is little need more than to call attention to them.

This book has the same high standards of the previous ones. The purpose of these books are to keep physicians up-to-date. On page 332 a case of Simmond's disease is discussed. This is a case report by one C. W. Dunn and illustrates the excellent results that may be attained with the use of endocrine products. The authors class the disease as multiple ductless gland sclerosis. Nervous and mental diseases are reviewed with considerable detail. The advances in the study of allergy have been given special attention in this issue. Pediatricians will find this a most interesting and instructive volume.

The 1936 YEAR BOOK OF GENERAL THERAPEUTICS, edited by Bernard Fantus, M. A., M. D., Professor of Materia Medica, Pharmacology and Therapeutics, University of Illinois College of Medicine; Member, Committee on Revision of the United States Pharmacopoeia, and of the National Formulary Revision Committee; Director of Therapeutics, Cook County Hospital, and Samuel J. Nichamin,, A. B., M. D.; Associate Attending Physician, Cook County Hospital; The Year Book Publishers; Chicago, Ill.; 1936; Price $2.50.

The year book of therapeutics is all that can be desired from a standpoint of evaluation of the newer drugs, methods, and treatments. It gives a rich yield of information of practical therapeutic importance.

Some of the advances discussed by many investigators are those in treatment of syphilis by new drugs, technique in varicose vein injection, newer treatment of diabetes, pertussis, scarlet fever, meningitis, endocrine disorders, vitamin deficiencies and so forth. Interesting new developments are found in treatment of almost every disease and these facts are all collected into this one little volume. It contains the real meat of all of the advances in therapeutics published in a host of medical periodicals.

OPERATIVE SURGERY, by J. Shelton Horsley, M. D., LL. D., F. A. C. S.; Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va., and Isaac A. Bigger, M. D.; Professor of Surgery, Medical College of Virginia, Surgeon-in-chief, Medical College of Virginia Hospitals, Richmond, Va.; C. V. Mosby Co.; 1937; two volumes, $15.00.

Horsley and Bigger have produced a classic amongst the numerous volumes on surgery. J. Shelton Horsley has written most of the chapters

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contained therein, including most of the work in general abdominal surgery such as abdominal incisions, acute conditions of the abdomen, stomach and bowel work, gall bladder surgery, chapters on pancreas and spleen, blood vessel and nerve suture as well as many chapters dealing with general considerations such as blood transfusion, principles of drainage and operative complications.

Bigger has covered the chapters on surgery of the neck, thorax, breast, hernia, sympathetic nervous system, and some of the operations upon the extremities. As is well known, Bigger is probably the world authority on surgery of the pericardium, heart and intra-pericardial portions of the great vessels, especially in the treatment of trauma to these structures.

C. C. Coleman has written on surgery of the central nervous system; Dr. A. I. Dodson writes on urology; Dr. John S. Horsley, Jr., on plastic surgery; Dr. Donald Faulkner on othopedics; and Dr. Guy W. Horsley on proctology.

The fourth edition of the work follows along the lines of the other editions. The methods described are those actually used by the authors and are based on preservation of physiologic function and anatomic structure. Each author is a master of his technique and descriptions of procedures are accurate, clear and detailed without being too verbose. The many illustrations are well done, being quite instructive, simple and easily understood.

Many new operative procedures are described which have heretofore not been published in any text. The book may be of inestimable value to all general and specialized surgeons.

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